MITSUBISHI MITSUBISHI MATERIALS TOOLS NEWS
2017.2 改訂 B205J YOUR GLOBAL CRAFTSMAN STUDIO

초경엔드밀

MS plus 엔드밀시리즈

시리즈 확대

일반부품가공부터금형가공까지 요구되는성능을플러스

MIRACLE SIGMA

고정도롱넥래디어스엔드밀시리즈추가

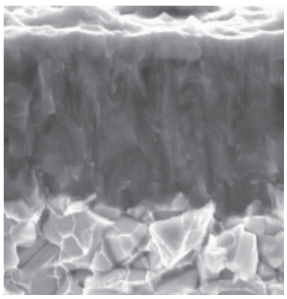
초경 엔드밀

MS plus

범용 엔드밀을 형상마다 재편성하여 필요로 하는 성능을 플러스했습니다.

MS+ (Al,Ti,Cr)N계 적층 코팅 (MS plus)

당사의 독자적인 코팅 기술로 (Al,Ti)N과 (Al,Cr)을 적층화.
폭 넓은 피삭재에 대응 가능한 코팅입니다.



MIRACLE SIGMA

(Al,Ti,Cr)N계 적층 코팅 (MS plus)의 특성

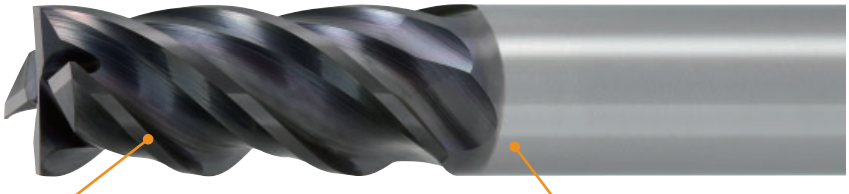
	(Al,Ti,Cr)N 계 적층	(Al,Ti)N	(Al,Cr)N
경도 (HV)	**3200**	2800	3100
산화개시온도 (℃)	**1100**	800	1100
밀착력 (N)	**100**	80	80

스퀘어 엔드밀

MPMHV/MPJHV

스텐레스강이나 탄소강 등의 부품 가공에
제진 성능과 변형으로 고능률 및 멀티 대응이 가능합니다.

MPMHV
범용성을 UP



부등 리드 형상
기존품 대비 떨림을 억제

날장과 전장
DCx2.5날장과 기존품 보다 긴 전장 설정

MPJHV
입벽 정삭 가공에
최적화

날장 변형
DCx3.3、DCx4를 라인업

래디어스 엔드밀

NEW

MPXLRB

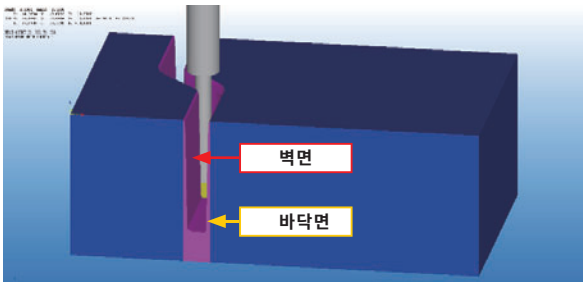
금형의 고정도· 고능률 가공을 실현

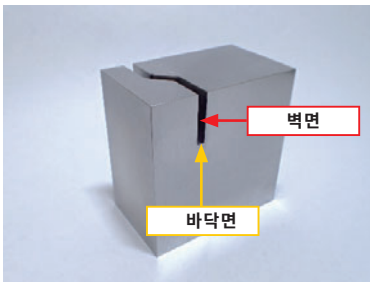
ø1 mm이상은 떨림을 억제하는 형상을 사용하고 있습니다.
ø0.4 ~ 6mm는 고능률 가공용 4날 래디어스 엔드밀입니다.

심이 없는 날 형상　　고정도 R ±0.005 mm

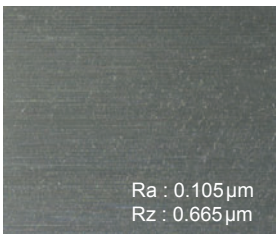
절삭성능

NAK80 가공면조도

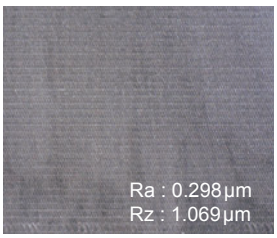




壁面



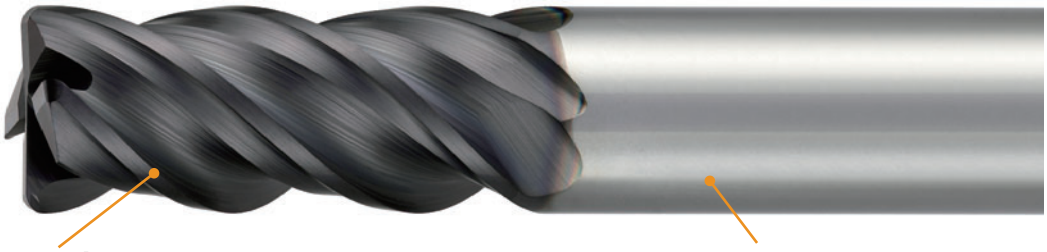
底面



<절삭조건>
피　삭　재 : NAK80
사 용 공 구 : MPXLRBD0200R030N160
회 전 속 도 : 9500 min-1
절 삭 속 도 : 100 m/min
테이블이송 : 1000 mm/min
1날당이송 : 0.026 mm/t.
절 입 량 : Z축스텝 ap 0.1 mm
X、Y축스텝 ae 0.3 mm
가 공 형 태 : AIR-BLOW
사 용 기 기 : 입형MC (HSK-A63)

MPMHVRB

부품가공에 고능률로 멀티 대응이 가능한 4날 제진 래디어스 엔드밀



부등 리드형상
기존품 대비 떨림을 억제

날장과 전장
DCx2.5날장과 기존품보다 긴 전장 설정

볼 엔드밀

MP2SDB

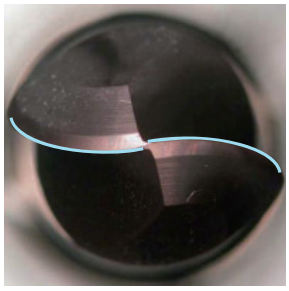
내구성이 뛰어나, 단조형 등의 황삭 가공이나 중황삭에 최적입니다.

강인성 초경모재
내구성이 뛰어난 강인성 모재를 사용

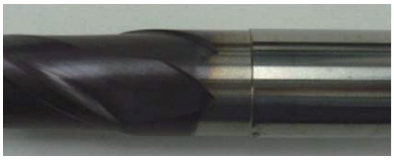
강S자 절삭날
황삭에 대응하는
강S자 절삭날은
내구성이 뛰어납니다.

오목한 목부
깊은 가공을 위해 목부를 오목하게 설계

기존품

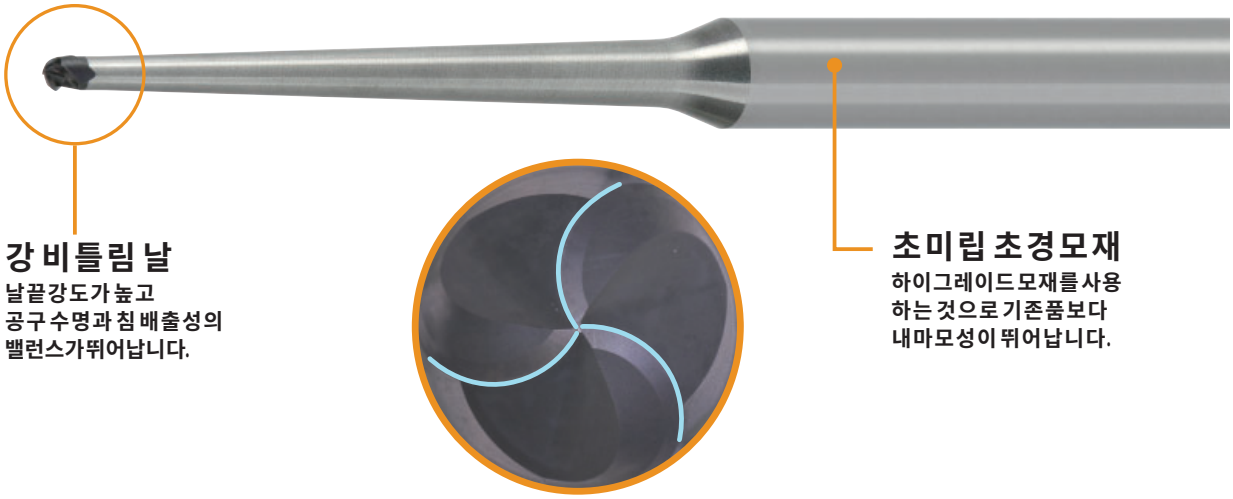


MP2SDB



MP3XB

단조형(40–52 HRC)의 깊은 황삭 가공이나 중황삭 가공에 최적입니다.



강 비틀림 날
날끝강도가 높고
공구 수명과 칩 배출성의
밸런스가뛰어납니다.

초미립 초경모재
하이그레이드모재를사용
하는 것으로 기존품보다
내마모성이 뛰어납니다.

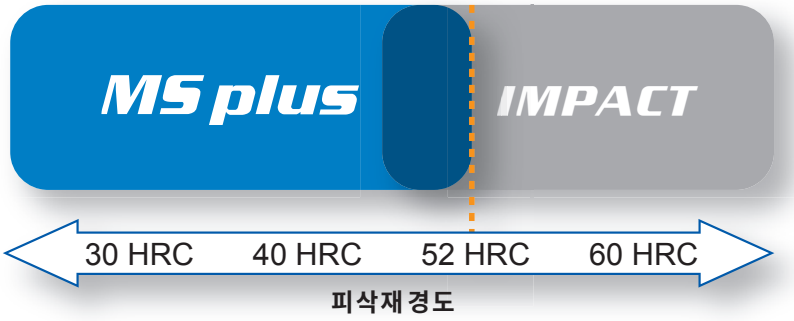
고강성·3날· 강 비틀림으로 고이송, 고절입의 고능률 가공이 가능합니다.

MP2SSB/MP2SB/MP2MB/MP2XLB

탄소강이나 프리하든강은 물론,
고경도재 가공에 대해서도 내마모성을 대폭 향상

범용 엔드밀의 한층 더 새로운 진화를 이룬 MS plus는 52HRC 정도 까지의 피삭재에 충분한 긴 수명을 기대할 수 있습니다.

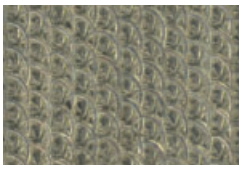
(52 HRC이상의 열처리강에 대해서는 고경도재에 적합한 IMPACT MIRACLE 시리즈 TOOLS NEWS B075를 이용해 주십시오.)



정삭 가공에 적합한 선단 형상

MS plus

절삭 성능이 좋아 양호한 정삭면 완성이 가능합니다.



커터 패스가 규칙적으로 보여, 절삭 성능의 양호함을 알수있습니다.

기존품

절삭 성능이 나쁘면 커터 패스가 뭉개져서 불명료하게 됩니다.

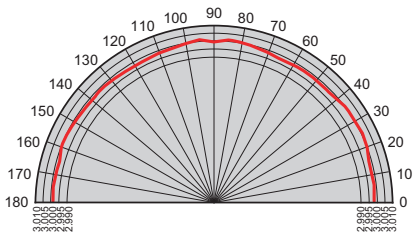
심이 없는 날 형상

고정도 R ±0.005 mm

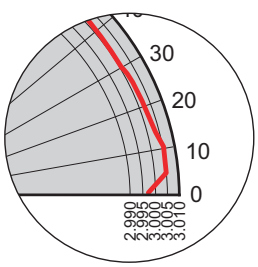
초미립 초경모재

하이그레이드 모재를 사용하는 것으로 기존품 보다 내마모성이 뛰어납니다.

MS plus



기존품



금형의 빼기구배 등, 외주 절삭날까지 사용하는 가공에서 양호한 정삭면을 실현합니다.

MS plus 엔드밀 시리즈

품번	엔드밀 외관	사이즈 범위	아이템 수	피삭재 P 탄소강·합금강·주철	P 공구강,프리하든강,고경도강	H 고경도강 55HRC 이하	H 고경도강 55HRC 초과	M 오스테나이트계 스텐레스강	S 티탄·내열합금	N 동합금	N 알루미늄합금	치수표	추천조건 개재
스퀘어 엔드밀													
MPMHV	4날 MSPLUS제진 엔드밀 (M) 	DC 1 – 20	19	◎	◎	○		◎	○			P6	P7
MPJHV	4날 MSPLUS제진 엔드밀 (J) 	DC 1 – 20	23	◎	◎	○		◎	○			P8	P9
래디어스 엔드밀													
MPMHVRB	4날 MSPLUS제진 래디어스 엔드밀 (M) 	DC 1 – 20	68	◎	◎	○		◎	○			P10	P12
NEW **MPXLRB**	MSPLUS 고정도 롱넥 래디어스 엔드밀 	DC 0.2 – 6	101	◎	◎	◎		○	○	○		P13	P16
볼 엔드밀													
MP2SSB	2날 MSPLUS볼 엔드밀 (S)쇼트 샹크 	RE 0.1 – 6	16	◎	◎	◎		○	○	○		P18	P21
MP2SB	2날 MSPLUS볼 엔드밀 (S) 	RE 0.1 – 6	29	◎	◎	◎		○	○	○		P19	P21
MP2MB	2날 MSPLUS볼 엔드밀 (M) 	RE 0.25 – 6	21	◎	◎	◎		○	○	○		P20	P21
MP2SDB	2날 MSPLUS강력형 볼 엔드밀 (S) 	RE 0.5 – 6	16	◎	◎	◎						P23	P24
MP2XLB	2날 MSPLUS롱넥 볼 엔드밀 	RE 0.05 – 3	232	◎	◎	◎		○	○	○		P25	P30
테이퍼 넥 볼 엔드밀													
MP3XB	3날 MSPLUS테이퍼 넥 볼 엔드밀 	RE 0.5 – 6	125	◎	◎	◎		○	○	○		P33	P36

MPMHV
4날 MSPLUS제진엔드밀(M)

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	동합금	알루미늄합금
◎	◎	○		◎	○		

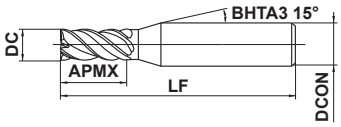


図1

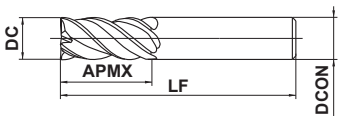


図2

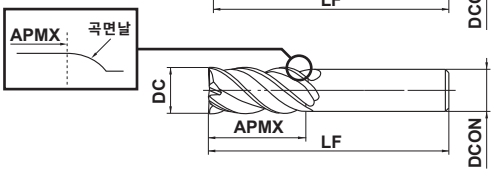


図3

DC≦12	DC>12			
0 - 0.02	0 - 0.03			
DCON=4	DCON=6	DCON=8		
0 - 0.005	0 - 0.005	0 - 0.006		
DCON=6(DC=8)	DCON=8(DC=10)	DCON=10	12≦DCON≦16	DCON=20
0 - 0.008	0 - 0.009	0 - 0.009	0 - 0.011	0 - 0.013

h5
h6

● 떨림을억제하여,스텐레스강이나탄소강에서안정절삭을실현합니다.

(mm)

규격	DC	APMX	LF	DCON	날수	재고	図	標準価格(円)
MPMHVD0100	1	2.5	45	4	4	●	1	4,430
MPMHVD0150	1.5	3.8	45	4	4	●	1	5,090
MPMHVD0200	2	5	45	4	4	●	1	4,240
MPMHVD0250	2.5	6.3	45	4	4	●	1	5,090
MPMHVD0300	3	7.5	45	6	4	●	1	5,040
MPMHVD0400	4	10	45	6	4	●	1	5,500
MPMHVD0500	5	12.5	50	6	4	●	1	5,920
MPMHVD0600	6	15	60	6	4	●	2	6,200
MPMHVD0700	7	17.5	70	8	4	●	2	9,660
MPMHVD0800	8	20	70	8	4	●	2	9,660
MPMHVD0800S06	8	20	90	6	4	●	3	14,200
MPMHVD1000	10	25	80	10	4	●	2	11,500
MPMHVD1000S08	10	25	100	8	4	●	3	17,200
MPMHVD1100S10	11	28	100	10	4	●	3	19,800
MPMHVD1200	12	30	100	12	4	●	2	16,600
MPMHVD1200S10	12	30	110	10	4	●	3	22,000
MPMHVD1300S12	13	32	110	12	4	●	3	24,900
MPMHVD1600	16	40	110	16	4	●	2	36,400
MPMHVD2000	20	50	125	20	4	●	2	55,100

ご用命の際は 呼び記号もしくは、MPMHV 外径○○mm(×シャンク径○○mm) とご指定ください。

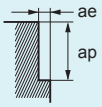
●：표준재고품

MPMHV
4날 MSPLUS제진엔드밀(M)

추천 절삭조건

측면절삭

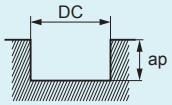
(mm)

피삭재	탄소강,합금강 (180－280HB) 구상흑연주철 S45C,SCM440,FCD450등				탄소강,합금강 (280－350HB) 프리하든강,합금공구강 SNCM439,NAK,PX5,SKD,SKT등				오스테나이트계스텐레스강 (≦200HB) 티탄합금 SUS304,SUS316,Ti-6Al-4V등				고경도강(45－52HRC) SKD61,SKT4등			
외경 DC (mm)	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap (mm)	절입량 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
1	38000	910	1.7	0.2	31000	500	1.7	0.2	25000	500	1.7	0.2	18000	290	1.7	0.05
1.5	27000	970	2.5	0.3	22000	530	2.5	0.3	18000	500	2.5	0.3	13000	310	2.5	0.08
2	21000	1500	3.5	0.4	17000	820	3.5	0.4	14000	640	3.5	0.4	10000	320	3.5	0.1
2.5	18000	1700	4.2	0.5	15000	900	4.2	0.5	12000	820	4.2	0.5	8500	360	4.2	0.13
3	16000	1800	5	0.6	13000	940	5	0.6	11000	880	5	0.6	7400	380	5	0.15
4	12000	1700	7	0.8	9500	950	7	0.8	8000	900	7	0.8	5600	400	7	0.2
5	9500	1800	8.5	1	7600	1100	8.5	1	6400	900	8.5	1	4500	430	8.5	0.25
6	8000	2100	10	1.2	6400	1300	10	1.2	5300	1100	10	1.2	3700	440	10	0.3
7	6800	2000	12	1.4	5500	1400	12	1.4	4500	1200	12	1.4	3200	450	12	0.35
8	6000	2000	13.5	1.6	4800	1400	13.5	1.6	4000	1200	13.5	1.6	2800	450	13.5	0.4
10	4800	2100	17	2	3800	1500	17	2	3200	1100	17	2	2200	440	17	0.5
11	2600	1200	18.5	1.1	2100	880	18.5	1.1	1700	520	18.5	1.1	1200	190	18.5	0.55
12	4000	1900	20.5	2.4	3200	1400	20.5	2.4	2700	1100	20.5	2.4	1900	380	20.5	0.6
13	2200	1100	22	1.3	1800	790	22	1.3	1500	490	22	1.3	1000	160	22	0.65
16	3000	1400	27.2	3.2	2400	1100	27.2	3.2	2000	840	27.2	3.2	1400	340	27.2	0.8
20	2400	1200	34	4	1900	840	34	4	1600	670	34	4	1100	260	34	1
절입량 기준																

1) DC =11,13은 슬림 샹크 타입이므로, 돌출길이 DC×5일 경우의 추천 조건이 기재되어 있습니다.
2) DC =8,10,12의 슬림 샹크 타입 사용 시, 상기 조건에서 절삭속도 60%, 이송속도 80%, 절입량 ae 50%를 낮춰서 사용해 주십시오.
3) 스텐레스강, 티탄합금 가공에는 수용성 절삭유재, 탄소강에는 AIRBLOW를 추천드립니다.
4) 제진 엔드밀은 일반 엔드밀과 비교 시 떨림 억제 효과가 있습니다만, 기계나 가공물의 장착 강성이 없을 경우, 떨림이 발생 할 수 있습니다.
그 때는 상기 표의 회전속도와 이송속도를 동일한 비율로 낮추거나, 절입량을 작게하여 사용해 주십시오.

홈 절삭

(mm)

피삭재	炭素鋼、合金鋼(180－280HB) ダクタイル鋳鉄 S45C,SCM440,FCD450等			炭素鋼、合金鋼(280－350HB) プリハードン鋼、合金工具鋼 SNCM439,NAK,PX5,SKD,SKT等			オーステナイト系ステンレス鋼 (≦200HB) チタン合金 SUS304,SUS316,Ti-6Al-4V等			高硬度鋼(45－52HRC) SKD61,SKT4等		
외경 DC (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)
1	31000	620	0.5	24000	380	0.5	20000	320	0.5	9500	110	0.2
1.5	22000	630	0.8	17000	410	0.8	14000	340	0.8	6400	130	0.3
2	17000	650	2	14000	450	2	11000	350	2	4800	130	0.4
2.5	15000	830	2.5	12000	580	2.5	9700	470	2.5	3800	130	0.5
3	13000	940	3	10000	660	3	8500	510	3	3200	140	0.6
4	9500	820	4	7600	600	4	6400	460	4	2400	150	0.8
5	7600	910	5	6100	670	5	5100	510	5	1900	170	1
6	6400	860	6	5100	630	6	4200	470	6	1600	190	1.2
7	5500	960	7	4400	710	7	3600	530	7	1400	190	1.4
8	4800	1000	8	3800	750	8	3200	580	8	1200	190	1.6
10	3800	910	10	3100	680	10	2500	500	10	950	150	2
12	3200	920	12	2500	660	12	2100	500	12	800	160	2.4
16	2400	690	16	1900	500	16	1600	380	16	600	120	3.2
20	1900	550	20	1500	400	20	1300	310	20	480	96	4
切込み量 基準	 DC : 엔드밀 외경											

5) 슬림 샹크 타입은 홈절삭을 추천드리지 않습니다.

MPJHV
4날 MSPLUS제진엔드밀(J)

APMX=DCx3.3 APMX=DCx4

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	동합금	알루미늄합금
◎	◎	○		◎	○		

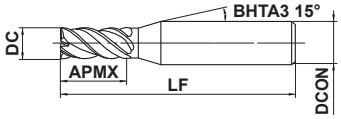


図1

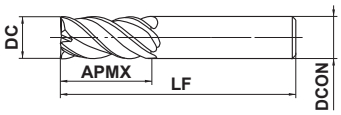


図2

h5 / h6

DC≦12	DC>12			
0 - 0.02	0 - 0.03			
DCON=4	DCON=6	DCON=8		
0 - 0.005	0 - 0.005	0 - 0.006		
DCON=10	DCON=12	DCON=16	DCON=20	
0 - 0.009	0 - 0.011	0 - 0.011	0 - 0.013	

- 떨림을억제하여,스텐레스강이나탄소강에서안정절삭을실현합니다.
- 입벽 정삭 가공에 적합한 세미롱 날장입니다.

(mm)

규격	DC	APMX	LF	DCON	날수	재고	図	標準価格(円)
MPJHVD0100AP04	1	4	45	4	4	●	1	5,900
MPJHVD0150AP06	1.5	6	45	4	4	●	1	6,710
MPJHVD0200AP06	2	6.5	60	6	4	●	1	5,650
MPJHVD0200AP08	2	8	60	6	4	●	1	5,900
MPJHVD0250AP10	2.5	10	60	6	4	●	1	6,710
MPJHVD0300AP10	3	10	60	6	4	●	1	6,340
MPJHVD0300AP12	3	12	60	6	4	●	1	6,630
MPJHVD0400AP13	4	13	60	6	4	●	1	6,920
MPJHVD0400AP16	4	16	60	6	4	●	1	7,240
MPJHVD0500AP17	5	17	60	6	4	●	1	7,510
MPJHVD0500AP20	5	20	60	6	4	●	1	7,850
MPJHVD0600AP20	6	20	60	6	4	●	2	8,200
MPJHVD0600AP24	6	24	60	6	4	●	2	8,500
MPJHVD0800AP26	8	26	80	8	4	●	2	11,800
MPJHVD0800AP32	8	32	80	8	4	●	2	12,400
MPJHVD1000AP33	10	33	100	10	4	●	2	15,600
MPJHVD1000AP40	10	40	100	10	4	●	2	16,300
MPJHVD1200AP40	12	40	110	12	4	●	2	20,200
MPJHVD1200AP48	12	48	110	12	4	●	2	20,800
MPJHVD1600AP53	16	53	125	16	4	●	2	44,600
MPJHVD1600AP64	16	64	125	16	4	●	2	46,400
MPJHVD2000AP66	20	66	140	20	4	●	2	65,700
MPJHVD2000AP80	20	80	140	20	4	●	2	67,800

ご用命の際は 呼び記号もしくは、MPJHV 外径○○mm(×刃長○○mm) とご指定ください。

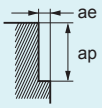
●：표준재고품

MPJHV
4날 MSPLUS제진엔드밀(J)

추천 절삭 조건

측면절삭

(mm)

피삭재		탄소강, 합금강 (180－280HB) 구상흑연주철 S45C,SCM440,FCD450등				탄소강, 합금강 (280－350HB) 프리하든강,합금공구강 SNCM439,NAK,PX5,SKD,SKT등				오스테나이트계스텐레스강 (≦200HB) 티탄합금 SUS304,SUS316,Ti-6Al-4V등				고경도강(45－52HRC) SKD61,SKT4등			
외경 DC (mm)	날장 APMX(mm)	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap (mm)	절입량 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
1	**4**	19000	300	3	0.03	15000	240	3	0.03	13000	210	3	0.03	13000	160	3	0.02
1.5	**6**	16000	320	4.5	0.05	13000	260	4.5	0.05	11000	220	4.5	0.05	8500	170	4.5	0.03
2	**6.5**	15000	500	5	0.1	12000	380	5	0.1	10000	320	5	0.1	7700	220	5	0.06
2	**8**	14000	470	6	0.06	11000	350	6	0.06	9500	300	6	0.06	7300	200	6	0.04
2.5	**10**	13000	660	7.5	0.08	11000	520	7.5	0.08	8900	390	7.5	0.08	6300	250	7.5	0.05
3	**10**	13000	890	7.4	0.15	10000	620	7.4	0.15	8400	470	7.4	0.15	5900	300	7.4	0.09
3	**12**	12000	820	9	0.09	9500	590	9	0.09	8000	450	9	0.09	5600	280	9	0.06
4	**13**	9400	940	9.9	0.2	7500	650	9.9	0.2	6300	530	9.9	0.2	4700	320	9.9	0.12
4	**16**	9000	900	12	0.12	7200	620	12	0.12	6000	500	12	0.12	4500	310	12	0.08
5	**17**	7500	990	12.4	0.25	6000	680	12.4	0.25	5000	560	12.4	0.25	3800	350	12.4	0.15
5	**20**	7200	950	15	0.15	5700	650	15	0.15	4800	540	15	0.15	3600	330	15	0.1
6	**20**	6300	1100	14.9	0.3	5000	760	14.9	0.3	4200	640	14.9	0.3	3200	350	14.9	0.18
6	**24**	6000	1000	18	0.18	4800	730	18	0.18	4000	610	18	0.18	3000	330	18	0.12
8	**26**	4700	1100	19.8	0.4	3800	800	19.8	0.4	3100	620	19.8	0.4	2400	360	19.8	0.24
8	**32**	4500	1000	24	0.24	3600	760	24	0.24	3000	600	24	0.24	2300	350	24	0.16
10	**33**	3800	1000	24.8	0.5	3000	760	24.8	0.5	2500	590	24.8	0.5	1900	330	24.8	0.3
10	**40**	3600	970	30	0.3	2900	730	30	0.3	2400	570	30	0.3	1800	310	30	0.2
12	**40**	3100	1000	29.7	0.6	2500	720	29.7	0.6	2100	550	29.7	0.6	1600	300	29.7	0.36
12	**48**	3000	970	36	0.36	2400	690	36	0.36	2000	520	36	0.36	1500	280	36	0.24
16	**53**	2400	780	27.2	0.48	1900	550	39.6	0.8	1600	420	39.6	0.8	1200	240	39.6	0.48
16	**64**	2200	710	48	0.48	1800	520	48	0.48	1500	390	48	0.48	1100	220	48	0.32
20	**66**	1900	620	34	0.6	1500	430	49.5	1	1300	340	49.5	1	950	190	49.5	0.6
20	**80**	1800	580	60	0.6	1400	400	60	0.6	1200	310	60	0.6	900	180	60	0.4
절입량기준																	

1) 스텐레스강,티탄합금가공에는수용성절삭유재,탄소강에는AIRBLOW를추천드립니다.
2) 제진 엔드밀은 이반 엔드밀과 비교시 떨림 억제 효과가 있습니다만, 기계나 가공물의 장착 강성이 없을 경우, 떨림이 발생 할 수 있습니다.
그 때는 상기 표의 회전속도와 이송속도를 동일한 비율로 낮추거나, 절입량을 작게하여 사용해 주십시오.

MPMHVRB

4날 MSPLUS제진래디어스엔드밀(M)

UWC MS+ 37° 40°

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	동합금	알루미늄합금
◎	◎	○		◎	○		

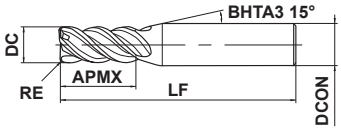


図1

R					
	0.1≦RE≦5				
	±0.015				
	DC≦12	DC>12			
	0 - 0.02	0 - 0.03			
h5	DCON=4	DCON=6	DCON=8		
	0 - 0.005	0 - 0.005	0 - 0.006		
h6	DCON=8(DC=10)	DCON=10(DC=12)	DCON=10	12≦DCON≦16	DCON=20
	0 - 0.009	0 - 0.009	0 - 0.009	0 - 0.011	0 - 0.013

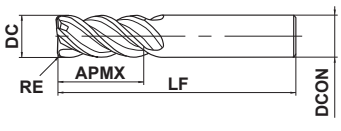


図2

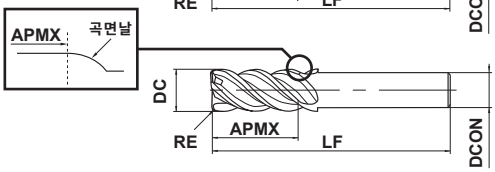


図3

●떨림을억제하여,스텐레스강이나탄소강에서안정절삭을실현합니다.

(mm)

규격	DC	RE	APMX	LF	DCON	날수	재고	図	標準価格(円)
MPMHVRBD0100R010	1	0.1	2.5	45	4	4	●	1	7,280
MPMHVRBD0100R020	1	0.2	2.5	45	4	4	●	1	7,280
MPMHVRBD0200R010	2	0.1	5	45	4	4	●	1	6,150
MPMHVRBD0200R020	2	0.2	5	45	4	4	●	1	6,150
MPMHVRBD0200R030	2	0.3	5	45	4	4	●	1	6,150
MPMHVRBD0200R050	2	0.5	5	45	4	4	●	1	6,150
MPMHVRBD0300R010	3	0.1	7.5	45	6	4	●	1	7,280
MPMHVRBD0300R020	3	0.2	7.5	45	6	4	●	1	7,280
MPMHVRBD0300R030	3	0.3	7.5	45	6	4	●	1	7,280
MPMHVRBD0300R050	3	0.5	7.5	45	6	4	●	1	7,280
MPMHVRBD0400R010	4	0.1	10	45	6	4	●	1	7,940
MPMHVRBD0400R020	4	0.2	10	45	6	4	●	1	7,940
MPMHVRBD0400R030	4	0.3	10	45	6	4	●	1	7,940
MPMHVRBD0400R050	4	0.5	10	45	6	4	●	1	7,940
MPMHVRBD0400R100	4	1	10	45	6	4	●	1	7,940
MPMHVRBD0500R010	5	0.1	12.5	50	6	4	●	1	8,280
MPMHVRBD0500R020	5	0.2	12.5	50	6	4	●	1	8,280
MPMHVRBD0500R030	5	0.3	12.5	50	6	4	●	1	8,280
MPMHVRBD0500R050	5	0.5	12.5	50	6	4	●	1	8,280
MPMHVRBD0500R100	5	1	12.5	50	6	4	●	1	8,280
MPMHVRBD0600R010	6	0.1	15	60	6	4	●	2	8,550
MPMHVRBD0600R020	6	0.2	15	60	6	4	●	2	8,550
MPMHVRBD0600R030	6	0.3	15	60	6	4	●	2	8,550
MPMHVRBD0600R050	6	0.5	15	60	6	4	●	2	8,550
MPMHVRBD0600R100	6	1	15	60	6	4	●	2	8,550
MPMHVRBD0800R020	8	0.2	20	70	8	4	●	2	12,200
MPMHVRBD0800R030	8	0.3	20	70	8	4	●	2	12,200
MPMHVRBD0800R050	8	0.5	20	70	8	4	●	2	12,200
MPMHVRBD0800R100	8	1	20	70	8	4	●	2	12,200
MPMHVRBD0800R150	8	1.5	20	70	8	4	●	2	12,200
MPMHVRBD0800R200	8	2	20	70	8	4	●	2	12,200
MPMHVRBD0800R250	8	2.5	20	70	8	4	●	2	12,200

ご用命の際は 呼び記号もしくは、MPMHVRB コーナ半径○○R×外径○○mm(×シャンク径) とご指定ください。

●：表준재고품

MPMHVRB

4날 MSPLUS제진래디어스엔드밀(M)

(mm)

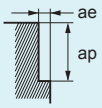
呼び記号	DC	RE	APMX	LF	DCON	날수	재고	図	標準価格(円)
MPMHVRBD0800R300	8	3	20	70	8	4	●	2	12,200
MPMHVRBD1000R030S08	10	0.3	25	100	8	4	●	3	23,600
MPMHVRBD1000R050S08	10	0.5	25	100	8	4	●	3	23,600
MPMHVRBD1000R100S08	10	1	25	100	8	4	●	3	23,600
MPMHVRBD1000R200S08	10	2	25	100	8	4	●	3	23,600
MPMHVRBD1000R020	10	0.2	25	80	10	4	●	2	15,800
MPMHVRBD1000R030	10	0.3	25	80	10	4	●	2	15,800
MPMHVRBD1000R050	10	0.5	25	80	10	4	●	2	15,800
MPMHVRBD1000R100	10	1	25	80	10	4	●	2	15,800
MPMHVRBD1000R150	10	1.5	25	80	10	4	●	2	15,800
MPMHVRBD1000R200	10	2	25	80	10	4	●	2	15,800
MPMHVRBD1000R250	10	2.5	25	80	10	4	●	2	15,800
MPMHVRBD1000R300	10	3	25	80	10	4	●	2	15,800
MPMHVRBD1200R030S10	12	0.3	30	110	10	4	●	3	27,600
MPMHVRBD1200R050S10	12	0.5	30	110	10	4	●	3	27,600
MPMHVRBD1200R100S10	12	1	30	110	10	4	●	3	27,600
MPMHVRBD1200R200S10	12	2	30	110	10	4	●	3	27,600
MPMHVRBD1200R300S10	12	3	30	110	10	4	●	3	27,600
MPMHVRBD1200R030	12	0.3	30	100	12	4	●	2	20,800
MPMHVRBD1200R050	12	0.5	30	100	12	4	●	2	20,800
MPMHVRBD1200R100	12	1	30	100	12	4	●	2	20,800
MPMHVRBD1200R150	12	1.5	30	100	12	4	●	2	20,800
MPMHVRBD1200R200	12	2	30	100	12	4	●	2	20,800
MPMHVRBD1200R300	12	3	30	100	12	4	●	2	20,800
MPMHVRBD1600R030	16	0.3	40	110	16	4	●	2	41,000
MPMHVRBD1600R050	16	0.5	40	110	16	4	●	2	41,000
MPMHVRBD1600R100	16	1	40	110	16	4	●	2	41,000
MPMHVRBD1600R200	16	2	40	110	16	4	●	2	41,000
MPMHVRBD1600R300	16	3	40	110	16	4	●	2	41,000
MPMHVRBD1600R500	16	5	40	110	16	4	●	2	41,000
MPMHVRBD2000R030	20	0.3	50	125	20	4	●	2	58,500
MPMHVRBD2000R050	20	0.5	50	125	20	4	●	2	58,500
MPMHVRBD2000R100	20	1	50	125	20	4	●	2	58,500
MPMHVRBD2000R200	20	2	50	125	20	4	●	2	58,500
MPMHVRBD2000R300	20	3	50	125	20	4	●	2	58,500
MPMHVRBD2000R500	20	5	50	125	20	4	●	2	58,500

●: 표준재고품

추천절삭조건

측면절삭

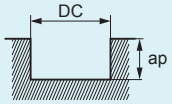
(mm)

피삭재	탄소강,합금강 (180－280HB) 구상흑연주철 S45C,SCM440,FCD450등				탄소강,합금강 (280－350HB) 프리하든강,합금공구강 SNCM439,NAK,PX5,SKD,SKT등				오스테나이트계스텐레스강 (≦200HB) 티탄합금 SUS304,SUS316,Ti-6Al-4V등				고경도강(45－52HRC) SKD61,SKT4등			
외경 DC (mm)	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap (mm)	절입량 ae (mm)	회전속도 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
1	38000	910	1.7	0.2	31000	500	1.7	0.2	25000	500	1.7	0.2	18000	290	1.7	0.05
2	21000	1500	3.5	0.4	17000	820	3.5	0.4	14000	640	3.5	0.4	10000	320	3.5	0.1
3	16000	1800	5	0.6	13000	940	5	0.6	11000	880	5	0.6	7400	380	5	0.15
4	12000	1700	7	0.8	9500	950	7	0.8	8000	900	7	0.8	5600	400	7	0.2
5	9500	1800	8.5	1	7600	1100	8.5	1	6400	900	8.5	1	4500	430	8.5	0.25
6	8000	2100	10	1.2	6400	1300	10	1.2	5300	1100	10	1.2	3700	440	10	0.3
8	6000	2000	13.5	1.6	4800	1400	13.5	1.6	4000	1200	13.5	1.6	2800	450	13.5	0.4
10	4800	2100	17	2	3800	1500	17	2	3200	1100	17	2	2200	440	17	0.5
12	4000	1900	20.5	2.4	3200	1400	20.5	2.4	2700	1100	20.5	2.4	1900	380	20.5	0.6
16	3000	1400	27.2	3.2	2400	1100	27.2	3.2	2000	840	27.2	3.2	1400	340	27.2	0.8
20	2400	1200	34	4	1900	840	34	4	1600	670	34	4	1100	260	34	1
절입량 기준																

1) DC =10,12의 슬림샹크타입 사용 시, 상기 조건에서 절삭소도 60%, 이송속도 80%, 절입량 ae 50%를 낮춰서 사용해 주십시오.
2) 스텐레스강, 티탄합금 가공에는 수용절삭유재, 탄소강에는 AIRBLOW를 추천드립니다.
3) 제진 엔드밀은 일반 엔드밀과 비교 시 떨림 억제 효과가 있습니다만, 기계나 가공물의 장착 강성이 없을 경우, 떨림이 발생할 수 있습니다.
그 때는 상기 표의 회전속도와 이송속도를 동일한 비율로 낮추거나, 절입량을 작게하여 사용해 주십시오.

홈절삭

(mm)

被削材	炭素鋼、合金鋼(180－280HB) ダクタイル鋳鉄 S45C,SCM440,FCD450等			炭素鋼、合金鋼(280－350HB) プリハードン鋼、合金工具鋼 SNCM439,NAK,PX5,SKD,SKT等			オーステナイト系ステンレス鋼 (≦200HB) チタン合金 SUS304,SUS316,Ti-6Al-4V等			高硬度鋼(45－52HRC) SKD61,SKT4等		
外径 DC (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)
1	31000	620	0.5	24000	380	0.5	20000	320	0.5	9500	110	0.2
2	17000	650	2	14000	450	2	11000	350	2	4800	130	0.4
3	13000	940	3	10000	660	3	8500	510	3	3200	140	0.6
4	9500	820	4	7600	600	4	6400	460	4	2400	150	0.8
5	7600	910	5	6100	670	5	5100	510	5	1900	170	1
6	6400	860	6	5100	630	6	4200	470	6	1600	190	1.2
8	4800	1000	8	3800	750	8	3200	580	8	1200	190	1.6
10	3800	910	10	3100	680	10	2500	500	10	950	150	2
12	3200	920	12	2500	660	12	2100	500	12	800	160	2.4
16	2400	690	16	1900	500	16	1600	380	16	600	120	3.2
20	1900	550	20	1500	400	20	1300	310	20	480	96	4
切込み量 基準	 DC : 엔드밀 외경											

4) 슬림샹크타입은 홈절삭을 추천드리지 않습니다.

MS plus 엔드밀 시리즈

MPXLRB NEW
MS PLUS 고정도 롱넥 래디어스 엔드밀

UWC MS+ 30° DC≦0.3 DC≧0.4

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고겨도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	동합금	알루미늄합금
◎	◎	◎		○	○	○	

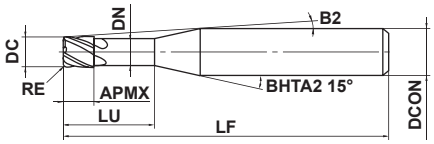
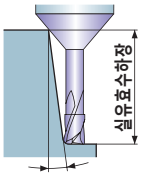


図1

워크 구배각에 대한 실유효수하장



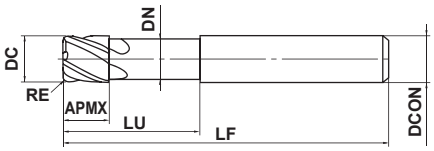


図2

R					
	±0.005				
	0.2≦DC≦6				
	0 -0.01				
h5	4≦DCON≦6				
	0 -0.005				

● 금형의 고정도· 고능률 가공을 실현합니다.

(mm)

呼び記号	DC	RE	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크 구배각에 대한 실유효수하장 30'	1°	2°	3°	標準価格 (円)
MPXLRBD0020R005N005	0.2	0.05	0.2	0.5	0.18	11.4°	50	4	2	●	1	0.5	0.5	0.6	0.7	9,800
MPXLRBD0020R005N010	0.2	0.05	0.2	1	0.18	10.8°	50	4	2	●	1	1.0	1.1	1.2	1.3	9,800
MPXLRBD0030R005N010	0.3	0.05	0.3	1	0.28	10.8°	50	4	2	●	1	1.0	1.1	1.2	1.3	9,200
MPXLRBD0030R005N020	0.3	0.05	0.3	2	0.28	9.8°	50	4	2	●	1	2.1	2.2	2.4	2.7	9,200
MPXLRBD0040R005N020	0.4	0.05	0.4	2	0.37	9.8°	50	4	4	●	1	2.1	2.2	2.4	2.6	7,800
MPXLRBD0040R005N030	0.4	0.05	0.4	3	0.37	8.9°	50	4	4	●	1	3.1	3.3	3.6	4.0	8,200
MPXLRBD0040R005N040	0.4	0.05	0.4	4	0.37	8.2°	50	4	4	●	1	4.2	4.3	4.8	5.3	8,200
MPXLRBD0050R005N020	0.5	0.05	0.5	2	0.47	9.7°	50	4	4	●	1	2.1	2.2	2.4	2.6	7,400
MPXLRBD0050R005N030	0.5	0.05	0.5	3	0.47	8.9°	50	4	4	●	1	3.1	3.3	3.6	4.0	7,600
MPXLRBD0050R005N040	0.5	0.05	0.5	4	0.47	8.1°	50	4	4	●	1	4.2	4.3	4.8	5.3	7,800
MPXLRBD0050R005N050	0.5	0.05	0.5	5	0.47	7.5°	50	4	4	●	1	5.2	5.4	6.0	6.6	7,800
MPXLRBD0060R005N020	0.6	0.05	0.6	2	0.57	9.7°	50	4	4	●	1	2.1	2.2	2.4	2.6	7,200
MPXLRBD0060R005N040	0.6	0.05	0.6	4	0.57	8.1°	50	4	4	●	1	4.2	4.3	4.8	5.3	7,400
MPXLRBD0060R005N060	0.6	0.05	0.6	6	0.57	6.9°	50	4	4	●	1	6.2	6.5	7.2	7.9	7,400
MPXLRBD0080R005N040	0.8	0.05	0.8	4	0.77	7.9°	50	4	4	●	1	4.2	4.3	4.8	5.3	7,200
MPXLRBD0080R005N060	0.8	0.05	0.8	6	0.77	6.8°	50	4	4	●	1	6.2	6.5	7.2	7.9	7,200
MPXLRBD0100R005N030	1	0.05	1	3	0.96	8.3°	50	4	4	●	1	3.2	3.4	3.8	4.2	6,800
MPXLRBD0100R005N040	1	0.05	1	4	0.96	7.6°	50	4	4	●	1	4.3	4.5	5.0	5.6	6,800
MPXLRBD0100R005N050	1	0.05	1	5	0.96	7.0°	50	4	4	●	1	5.4	5.6	6.2	6.9	7,000
MPXLRBD0100R005N060	1	0.05	1	6	0.96	6.5°	50	4	4	●	1	6.4	6.7	7.4	8.2	7,000
MPXLRBD0100R005N080	1	0.05	1	8	0.96	5.6°	50	4	4	●	1	8.5	8.9	9.8	10.9	7,200
MPXLRBD0100R005N100	1	0.05	1	10	0.96	5.0°	50	4	4	●	1	10.6	11.1	12.2	13.5	7,200
MPXLRBD0100R005N120	1	0.05	1	12	0.96	4.5°	50	4	4	●	1	12.7	13.3	14.6	16.2	7,400
MPXLRBD0100R010N030	1	0.1	1	3	0.96	8.4°	50	4	4	●	1	3.2	3.4	3.8	4.2	6,800
MPXLRBD0100R010N040	1	0.1	1	4	0.96	7.6°	50	4	4	●	1	4.3	4.5	5.0	5.5	6,800
MPXLRBD0100R010N050	1	0.1	1	5	0.96	7.0°	50	4	4	●	1	5.3	5.6	6.2	6.9	7,000
MPXLRBD0100R010N060	1	0.1	1	6	0.96	6.5°	50	4	4	●	1	6.4	6.7	7.4	8.2	7,000
MPXLRBD0100R010N080	1	0.1	1	8	0.96	5.6°	50	4	4	●	1	8.5	8.9	9.8	10.8	7,200
MPXLRBD0100R010N100	1	0.1	1	10	0.96	5.0°	50	4	4	●	1	10.6	11.1	12.2	13.5	7,200
MPXLRBD0100R010N120	1	0.1	1	12	0.96	4.5°	50	4	4	●	1	12.7	13.3	14.6	16.2	7,400
MPXLRBD0120R010N100	1.2	0.1	1.2	10	1.16	4.8°	50	4	4	●	1	10.6	11.1	12.2	13.5	7,200
MPXLRBD0120R020N100	1.2	0.2	1.2	10	1.16	4.8°	50	4	4	●	1	10.6	11.1	12.2	13.5	7,200
MPXLRBD0150R010N060	1.5	0.1	1.5	6	1.44	6.0°	50	4	4	●	1	6.4	6.7	7.3	8.1	6,800
MPXLRBD0150R010N120	1.5	0.1	1.5	12	1.44	4.0°	50	4	4	●	1	12.6	13.2	14.5	16.1	7,400

ご用命の際は 呼び記号もしくは、MPXLRB コーナ半径○○R×外径○○mm×首下長○○mm とご指定ください。

●：表준재고품

(mm)

呼び記号	DC	RE	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
												30'	1°	2°	3°	
MPXLRBD0150R010N180	1.5	0.1	1.5	18	1.44	3.0°	60	4	4	●	1	18.9	19.7	21.7	24.0	7,600
MPXLRBD0150R020N060	1.5	0.2	1.5	6	1.44	6.0°	50	4	4	●	1	6.4	6.7	7.3	8.1	6,800
MPXLRBD0150R020N120	1.5	0.2	1.5	12	1.44	4.0°	50	4	4	●	1	12.6	13.2	14.5	16.0	7,400
MPXLRBD0150R020N180	1.5	0.2	1.5	18	1.44	3.0°	60	4	4	●	1	18.9	19.7	21.7	*	7,600
MPXLRBD0150R030N060	1.5	0.3	1.5	6	1.44	6.1°	50	4	4	●	1	6.3	6.6	7.3	8.0	6,800
MPXLRBD0150R030N120	1.5	0.3	1.5	12	1.44	4.0°	50	4	4	●	1	12.6	13.2	14.5	16.0	7,400
MPXLRBD0150R030N180	1.5	0.3	1.5	18	1.44	3.0°	60	4	4	●	1	18.9	19.7	21.6	*	7,600
MPXLRBD0200R010N080	2	0.1	2	8	1.94	4.5°	50	4	4	●	1	8.5	8.8	9.7	10.8	7,000
MPXLRBD0200R010N120	2	0.1	2	12	1.94	3.4°	50	4	4	●	1	12.6	13.2	14.5	16.1	7,600
MPXLRBD0200R010N160	2	0.1	2	16	1.94	2.8°	60	4	4	●	1	16.8	17.6	19.3	*	7,800
MPXLRBD0200R010N200	2	0.1	2	20	1.94	2.3°	60	4	4	●	1	21.0	21.9	24.1	*	8,000
MPXLRBD0200R010N240	2	0.1	2	24	1.94	2.0°	70	4	4	●	1	25.2	26.3	*	*	8,200
MPXLRBD0200R020N080	2	0.2	2	8	1.94	4.5°	50	4	4	●	1	8.5	8.8	9.7	10.7	7,000
MPXLRBD0200R020N120	2	0.2	2	12	1.94	3.4°	50	4	4	●	1	12.6	13.2	14.5	*	7,600
MPXLRBD0200R020N160	2	0.2	2	16	1.94	2.8°	60	4	4	●	1	16.8	17.6	19.3	*	7,800
MPXLRBD0200R020N200	2	0.2	2	20	1.94	2.3°	60	4	4	●	1	21.0	21.9	24.0	*	8,000
MPXLRBD0200R020N240	2	0.2	2	24	1.94	2.0°	70	4	4	●	1	25.1	26.3	*	*	8,200
MPXLRBD0200R030N080	2	0.3	2	8	1.94	4.5°	50	4	4	●	1	8.5	8.8	9.7	10.7	7,000
MPXLRBD0200R030N120	2	0.3	2	12	1.94	3.5°	50	4	4	●	1	12.6	13.2	14.5	16.0	7,600
MPXLRBD0200R030N160	2	0.3	2	16	1.94	2.8°	60	4	4	●	1	16.8	17.5	19.2	*	7,800
MPXLRBD0200R030N200	2	0.3	2	20	1.94	2.3°	60	4	4	●	1	21.0	21.9	24.0	*	8,000
MPXLRBD0200R030N240	2	0.3	2	24	1.94	2.0°	70	4	4	●	1	25.1	26.3	*	*	8,200
MPXLRBD0300R010N080	3	0.1	3	8	2.9	5.7°	60	6	4	●	1	8.4	8.8	9.6	10.7	8,200
MPXLRBD0300R010N120	3	0.1	3	12	2.9	4.5°	60	6	4	●	1	12.6	13.1	14.4	16.0	8,800
MPXLRBD0300R010N180	3	0.1	3	18	2.9	3.4°	70	6	4	●	1	18.8	19.7	21.6	23.9	9,400
MPXLRBD0300R010N240	3	0.1	3	24	2.9	2.8°	70	6	4	●	1	25.1	26.2	28.8	*	9,600
MPXLRBD0300R010N300	3	0.1	3	30	2.9	2.3°	70	6	4	●	1	31.3	32.7	35.9	*	10,200
MPXLRBD0300R010N360	3	0.1	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.3	*	*	10,800
MPXLRBD0300R020N120	3	0.2	3	12	2.9	4.5°	60	6	4	●	1	12.6	13.1	14.4	15.9	8,800
MPXLRBD0300R020N180	3	0.2	3	18	2.9	3.4°	60	6	4	●	1	18.8	19.6	21.6	23.9	9,400
MPXLRBD0300R020N240	3	0.2	3	24	2.9	2.8°	70	6	4	●	1	25.1	26.2	28.7	*	9,600
MPXLRBD0300R020N300	3	0.2	3	30	2.9	2.3°	70	6	4	●	1	31.3	32.7	35.9	*	10,200
MPXLRBD0300R020N360	3	0.2	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.3	43.1	*	10,800
MPXLRBD0300R030N120	3	0.3	3	12	2.9	4.5°	60	6	4	●	1	12.5	13.1	14.4	15.9	8,800
MPXLRBD0300R030N180	3	0.3	3	18	2.9	3.5°	60	6	4	●	1	18.8	19.6	21.5	23.9	9,400
MPXLRBD0300R030N240	3	0.3	3	24	2.9	2.8°	70	6	4	●	1	25.1	26.2	28.7	*	9,600
MPXLRBD0300R030N300	3	0.3	3	30	2.9	2.3°	70	6	4	●	1	31.3	32.7	35.9	*	10,200
MPXLRBD0300R030N360	3	0.3	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.2	*	*	10,800
MPXLRBD0300R050N120	3	0.5	3	12	2.9	4.6°	60	6	4	●	1	12.5	13.1	14.3	15.8	8,800
MPXLRBD0300R050N180	3	0.5	3	18	2.9	3.5°	60	6	4	●	1	18.8	19.6	21.5	23.8	9,400
MPXLRBD0300R050N240	3	0.5	3	24	2.9	2.8°	70	6	4	●	1	25.1	26.2	28.7	*	9,600
MPXLRBD0300R050N300	3	0.5	3	30	2.9	2.3°	70	6	4	●	1	31.3	32.7	35.9	*	10,200
MPXLRBD0300R050N360	3	0.5	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.2	*	*	10,800
MPXLRBD0400R010N160	4	0.1	4	16	3.9	2.8°	70	6	4	●	1	16.7	17.5	19.2	*	9,400
MPXLRBD0400R010N240	4	0.1	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*	10,200
MPXLRBD0400R010N320	4	0.1	4	32	3.9	1.6°	70	6	4	●	1	33.4	34.9	*	*	10,800
MPXLRBD0400R010N480	4	0.1	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*	11,800
MPXLRBD0400R020N160	4	0.2	4	16	3.9	2.8°	70	6	4	●	1	16.7	17.5	19.2	*	9,400
MPXLRBD0400R020N240	4	0.2	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*	10,200
MPXLRBD0400R020N320	4	0.2	4	32	3.9	1.6°	70	6	4	●	1	33.4	34.9	*	*	10,800
MPXLRBD0400R020N480	4	0.2	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*	11,800
MPXLRBD0400R030N160	4	0.3	4	16	3.9	2.8°	70	6	4	●	1	16.7	17.5	19.1	*	9,400

* 간섭없음

MPXLRB NEW

MSPLUS고정도롱넥래디어스엔드밀

(mm)

呼び記号	DC	RE	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
												30'	1°	2°	3°	
MPXLRBD0400R030N240	4	0.3	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*	10,200
MPXLRBD0400R030N320	4	0.3	4	32	3.9	1.6°	70	6	4	●	1	33.4	34.9	*	*	10,800
MPXLRBD0400R030N480	4	0.3	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*	11,800
MPXLRBD0400R050N160	4	0.5	4	16	3.9	2.8°	70	6	4	●	1	16.7	17.4	19.1	*	9,400
MPXLRBD0400R050N240	4	0.5	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*	10,200
MPXLRBD0400R050N320	4	0.5	4	32	3.9	1.6°	70	6	4	●	1	33.4	34.9	*	*	10,800
MPXLRBD0400R050N480	4	0.5	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*	11,800
MPXLRBD0600R010N240	6	0.1	6	24	5.85	—	70	6	4	●	2	*	*	*	*	12,400
MPXLRBD0600R010N480	6	0.1	6	48	5.85	—	100	6	4	●	2	*	*	*	*	14,000
MPXLRBD0600R020N240	6	0.2	6	24	5.85	—	70	6	4	●	2	*	*	*	*	12,400
MPXLRBD0600R020N480	6	0.2	6	48	5.85	—	100	6	4	●	2	*	*	*	*	14,000
MPXLRBD0600R030N240	6	0.3	6	24	5.85	—	70	6	4	●	2	*	*	*	*	12,400
MPXLRBD0600R030N480	6	0.3	6	48	5.85	—	100	6	4	●	2	*	*	*	*	14,000
MPXLRBD0600R050N240	6	0.5	6	24	5.85	—	70	6	4	●	2	*	*	*	*	12,400
MPXLRBD0600R050N480	6	0.5	6	48	5.85	—	100	6	4	●	2	*	*	*	*	14,000

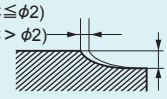
* 간섭없음

● : 표준재고품

추천 절삭 조건

(mm)

피삭재		탄소강,합금강 (180−280HB) 프리하든강,합금공구강 석출경화계스텐레스강 (<450HB) S45C、SCM440、NAK、PX5、SKD、SKT、SUS630、SUS631등				고경도강(45−52HRC) SKD61、SKT4등			
외경 DC	수하장 LU	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap	절입량 ae	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap	절입량 ae
0.2	0.5	30000	180	0.003	0.04	30000	150	0.003	0.04
	1	30000	120	0.003	0.04	30000	100	0.003	0.04
0.3	1	30000	210	0.003	0.08	30000	180	0.003	0.08
	2	30000	120	0.003	0.08	30000	100	0.003	0.08
0.4	2	31000	970	0.005	0.10	31000	810	0.005	0.10
	3	31000	790	0.004	0.10	31000	660	0.004	0.10
	4	31000	540	0.003	0.10	31000	450	0.003	0.10
0.5	2	31000	1500	0.006	0.12	31000	1300	0.006	0.12
	3	31000	1300	0.005	0.12	31000	1100	0.005	0.12
	4	31000	970	0.004	0.12	31000	810	0.004	0.12
	5	25000	790	0.004	0.12	25000	660	0.004	0.12
0.6	2	31000	2100	0.020	0.13	31000	1800	0.020	0.13
	4	25000	1300	0.015	0.13	25000	1100	0.015	0.13
	6	20000	790	0.008	0.13	20000	660	0.008	0.13
0.8	4	25000	3200	0.025	0.20	25000	2700	0.025	0.20
	6	20000	2100	0.020	0.20	20000	1800	0.020	0.20
1	3	24000	2400	0.045	0.30	20000	2000	0.045	0.30
	4	24000	1900	0.040	0.30	20000	1600	0.040	0.30
	5	24000	1800	0.035	0.25	20000	1500	0.035	0.25
	6	20000	1400	0.030	0.25	17000	1200	0.030	0.25
	8	20000	1000	0.020	0.20	17000	880	0.020	0.20
	10	15000	800	0.015	0.10	13000	670	0.015	0.10
	12	15000	370	0.010	0.01	13000	310	0.010	0.01
1.2	10	18000	1500	0.030	0.25	15000	1300	0.030	0.25
1.5	6	20000	2400	0.050	0.40	17000	2000	0.050	0.40
	12	15000	1400	0.040	0.30	13000	1200	0.040	0.30
	18	12000	670	0.010	0.15	10000	560	0.010	0.15
2	8	15000	2600	0.050	0.50	13000	2200	0.050	0.50
	12	15000	2100	0.045	0.50	13000	1800	0.045	0.50
	16	14000	1900	0.040	0.35	12000	1600	0.040	0.35
	20	14000	1100	0.015	0.25	12000	960	0.015	0.25
	24	9300	930	0.010	0.20	7800	780	0.010	0.20
3	8	12000	3300	0.100	0.80	10000	2800	0.100	0.80
	12	12000	3100	0.080	0.80	10000	2600	0.080	0.80
	18	11000	3100	0.070	0.70	9600	2600	0.070	0.70
	24	11000	2600	0.060	0.50	9300	2200	0.060	0.50
	30	9000	1300	0.030	0.40	7500	1100	0.030	0.40
	36	6200	910	0.010	0.30	5200	760	0.010	0.30
4	16	9000	3200	0.100	1.00	7500	2700	0.100	1.00
	24	7900	2500	0.085	0.80	6600	2100	0.085	0.80
	32	6900	1600	0.040	0.70	5800	1400	0.040	0.70
	48	4800	740	0.010	0.35	4000	620	0.010	0.35
6	24	5500	2700	0.120	1.50	4600	2263	0.120	1.50
	48	3800	1200	0.050	1.20	3200	1000	0.050	1.20
절입량기준		≦0.2RE (DC≦ϕ2) ≦0.4RE (DC＞ϕ2)				≦0.1mm (DC≦ϕ1.5) ≦0.2mm (DC≦ϕ4) ≦0.5mm (DC≦ϕ6)			



DC:엔드밀 외경

1) 상기 표는 코너R날을 주로 사용할 경우의 기준입니다. 외주날을 주로 사용하는 경우에는 이송속도의 하한기준으로 사용해 주십시오.
2) 절입이 작을 경우, 회전속도와 이송속도를 한층 더 올릴 수 있습니다.
3) 금형 등의 형상 가공의 경우, 가공형상이나 가공방법, 절입량에 의해 가공상태가 상당히 달라집니다.
   특히 코너부에는 이송속도를 낮춰 주십시오.
4) 기계나 가공물의 장착 강성이 없어 떨림 및 이상음이 발생할 경우, 상기 표의 회전속도와 이송속도를 동일한 비율로 낮춰 사용해 주십시오.

MPXLRB NEW

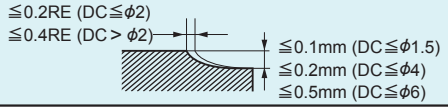
MSPLUS고정도롱넥래디어스엔드밀(S)

추천절삭조건

(mm)

피삭재		오스테나이트계스텐레스강 (≦200HB) 티탄합금 (<450HB) SUS304、SUS316、Ti-6Al-4V등				동· 동합금			
외경 DC	수하장 LU	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap	절입량 ae	회전속도 (min^{-1})	이송속도 (mm/min)	절입량 ap	절입량 ae
0.2	0.5	33000	170	0.003	0.04	30000	150	0.003	0.08
	1	30000	110	0.003	0.04	30000	100	0.003	0.08
0.3	1	30000	200	0.003	0.08	30000	180	0.003	0.16
	2	30000	110	0.003	0.08	30000	100	0.003	0.16
0.4	2	31000	930	0.005	0.10	31000	810	0.005	0.20
	3	31000	750	0.004	0.10	31000	660	0.004	0.20
	4	31000	510	0.003	0.10	31000	450	0.003	0.20
0.5	2	31000	1400	0.006	0.12	31000	1300	0.006	0.24
	3	31000	1200	0.005	0.12	31000	1100	0.005	0.24
	4	31000	930	0.004	0.12	31000	810	0.004	0.24
	5	25000	750	0.004	0.12	25000	660	0.004	0.24
0.6	2	31000	2000	0.020	0.13	31000	1800	0.020	0.26
	4	25000	1200	0.015	0.13	25000	1100	0.015	0.26
	6	20000	750	0.008	0.13	20000	660	0.008	0.26
0.8	4	25000	3100	0.025	0.20	25000	2700	0.025	0.40
	6	20000	2000	0.020	0.20	20000	1800	0.020	0.40
1	3	23000	2300	0.045	0.30	20000	2000	0.045	0.60
	4	23000	1800	0.040	0.30	20000	1600	0.040	0.60
	5	23000	1700	0.035	0.25	20000	1500	0.035	0.50
	6	19000	1300	0.030	0.25	17000	1200	0.030	0.50
	8	19000	1000	0.020	0.20	17000	880	0.020	0.40
	10	14000	770	0.015	0.10	13000	670	0.015	0.20
	12	14000	350	0.010	0.01	13000	310	0.010	0.02
1.2	10	17000	1400	0.030	0.25	15000	1300	0.030	0.50
1.5	6	19000	2300	0.050	0.40	14700	1700	0.050	0.80
	12	14000	1300	0.040	0.30	11000	1000	0.040	0.60
	18	11000	640	0.010	0.15	8600	480	0.010	0.30
2	8	14000	2500	0.050	0.50	11000	1900	0.050	1.00
	12	14000	2000	0.045	0.50	11000	1500	0.045	1.00
	16	13000	1800	0.040	0.35	10000	1300	0.040	0.70
	20	13000	1100	0.015	0.25	10000	830	0.015	0.50
	24	8900	890	0.010	0.20	6700	670	0.010	0.40
3	8	11000	3200	0.100	0.80	8600	2400	0.100	1.60
	12	11000	2900	0.080	0.80	8600	2200	0.080	1.60
	18	11000	2900	0.070	0.70	8300	2200	0.070	1.40
	24	10000	2500	0.060	0.50	8000	1900	0.060	1.00
	30	8600	1200	0.030	0.40	6500	950	0.030	0.80
	36	5900	870	0.010	0.30	4500	660	0.010	0.60
4	16	8600	3100	0.100	1.00	6500	2300	0.100	2.00
	24	7500	2400	0.085	0.80	5700	1800	0.085	1.60
	32	6600	1600	0.040	0.70	5000	1200	0.040	1.40
	48	4600	710	0.010	0.35	3400	530	0.010	0.70
6	24	5200	2600	0.120	1.50	4000	1900	0.120	3.00
	48	3600	1100	0.05	1.20	2700	870	0.050	2.40

절입량기준



DC:엔드밀외경

1) 상기표는코너R날을주로사용할경우의기준입니다.외주날을주로사용하는경우에는이송속도의하한기준으로사용해주십시오.
2) 절입이작을경우,회전속도와이송속도를한층더올릴수있습니다.
3) 금형등의형상가공의경우,가공형상이나가공방법,절입량에의해가공상태가상당히달라집니다.
특히코너부에는이송속도를낮춰주십시오.
4) 기계나가공물의장착강성이없어떨림및이상음이발생할경우,상기표의회전속도와이송속도를동일한비율로낮춰사용해주십시오.

MP2SSB
2날 MS PLUS 볼 엔드밀(S) 쇼트 샹크

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	합금강	알루미늄합금
◎	◎	◎		○	○	○	

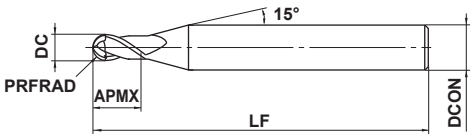


図1

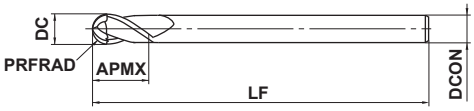


図2

R	0.1≦PRFRAD≦6				
	±0.005				
h5	4≦DCON≦6	8≦DCON≦10	DCON=12		
	0 - 0.005	0 - 0.006	0 - 0.008		

● 범용 2날 쇼트 날장 볼 엔드밀입니다. 탄소강부터 고경도강까지 폭 넓은 피삭재에서 뛰어난 성능을 발휘 합니다.

呼び記号	PRFRAD	DC	APMX	LF	DCON	刃数	在庫	図	標準価格(円)
MP2SSBR0010	0.1	0.2	0.2	40	4	2	●	1	6,440
MP2SSBR0020	0.2	0.4	0.4	40	4	2	●	1	3,600
MP2SSBR0030	0.3	0.6	0.6	40	4	2	●	1	3,100
MP2SSBR0040	0.4	0.8	0.8	40	4	2	●	1	2,990
MP2SSBR0050	0.5	1	1	40	4	2	●	1	2,600
MP2SSBR0050S06	0.5	1	1	40	6	2	●	1	3,600
MP2SSBR0075	0.75	1.5	1.5	40	4	2	●	1	3,200
MP2SSBR0075S06	0.75	1.5	1.5	40	6	2	●	1	4,200
MP2SSBR0100	1	2	2	45	6	2	●	1	3,500
MP2SSBR0150	1.5	3	3	45	6	2	●	1	3,100
MP2SSBR0200	2	4	4	45	6	2	●	1	3,400
MP2SSBR0250	2.5	5	5	50	6	2	●	1	3,930
MP2SSBR0300	3	6	6	50	6	2	●	2	4,100
MP2SSBR0400	4	8	8	60	8	2	●	2	7,200
MP2SSBR0500	5	10	10	70	10	2	●	2	9,410
MP2SSBR0600	6	12	12	75	12	2	●	2	13,900

ご用命の際は 呼び記号もしくは、MP2SSB ○○R×シャンク径○○mm とご指定ください。

●：표준재고품

MP2SB
2날 MS PLUS 볼 엔드밀 (S)

UWC MS+ 30°

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	합금강	알루미늄합금
◎	◎	◎		○	○	○	

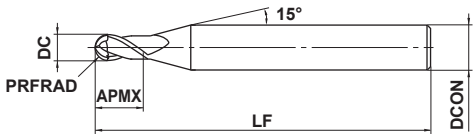


図1

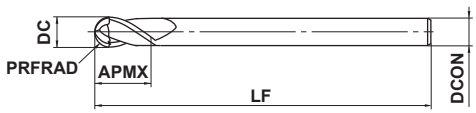


図2

R	0.1≦PRFRAD≦6				
	±0.005				
h5	4≦DCON≦6	8≦DCON≦10	DCON=12		
	0 - 0.005	0 - 0.006	0 - 0.008		

● 범용 2날 쇼트 날장 볼 엔드밀입니다. 탄소강부터 고경도강까지 폭 넓은 피삭재에서 뛰어난 성능을 발휘합니다.

呼び記号	PRFRAD	DC	APMX	LF	DCON	刃数	在庫	図	標準価格 (円)
MP2SBR0010	0.1	0.2	0.3	45	4	2	●	1	6,440
MP2SBR0015	0.15	0.3	0.5	45	4	2	●	1	5,200
MP2SBR0020	0.2	0.4	0.6	45	4	2	●	1	3,600
MP2SBR0020S06	0.2	0.4	0.6	50	6	2	●	1	4,700
MP2SBR0025	0.25	0.5	0.8	45	4	2	●	1	3,100
MP2SBR0030	0.3	0.6	0.9	45	4	2	●	1	3,100
MP2SBR0030S06	0.3	0.6	0.9	50	6	2	●	1	4,150
MP2SBR0035	0.35	0.7	1.1	45	4	2	●	1	4,830
MP2SBR0040	0.4	0.8	1.2	45	4	2	●	1	2,900
MP2SBR0040S06	0.4	0.8	1.2	50	6	2	●	1	3,900
MP2SBR0045	0.45	0.9	1.4	45	4	2	●	1	4,800
MP2SBR0050	0.5	1	1.5	45	4	2	●	1	2,600
MP2SBR0050S06	0.5	1	1.5	50	6	2	●	1	3,600
MP2SBR0060	0.6	1.2	1.8	45	4	2	●	1	3,680
MP2SBR0070	0.7	1.4	2.1	45	4	2	●	1	3,700
MP2SBR0075	0.75	1.5	2.3	45	4	2	●	1	3,200
MP2SBR0075S06	0.75	1.5	2.3	50	6	2	●	1	4,200
MP2SBR0080	0.8	1.6	2.4	45	4	2	●	1	3,700
MP2SBR0090	0.9	1.8	2.7	45	4	2	●	1	4,830
MP2SBR0100	1	2	3	50	4	2	●	1	2,500
MP2SBR0100S06	1	2	3	50	6	2	●	1	3,520
MP2SBR0125	1.25	2.5	3.8	50	4	2	●	1	4,090
MP2SBR0150	1.5	3	4.5	70	6	2	●	1	3,100
MP2SBR0200	2	4	6	70	6	2	●	1	3,400
MP2SBR0250	2.5	5	7.5	80	6	2	●	1	3,930
MP2SBR0300	3	6	9	80	6	2	●	2	4,100
MP2SBR0400	4	8	12	90	8	2	●	2	7,200
MP2SBR0500	5	10	15	100	10	2	●	2	9,410
MP2SBR0600	6	12	18	110	12	2	●	2	13,900

MP2MB
2날 MS PLUS 볼 엔드밀 (M)

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	합금강	알루미늄합금
◎	◎	◎		○	○	○	

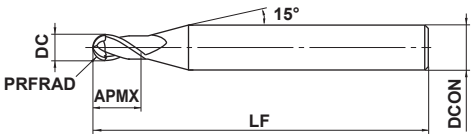


図1

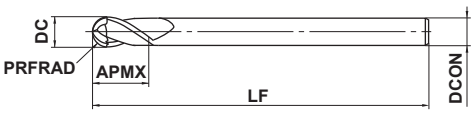


図2

R	0.25≦PRFRAD≦6				
	±0.005				
h5	4≦DCON≦6	8≦DCON≦10	DCON=12		
	0 - 0.005	0 - 0.006	0 - 0.008		

● 범용 2날 엔드밀 날장 볼 엔드밀입니다. 탄소강부터 고경도강까지 폭 넓은 피삭재에서 뛰어난 성능을 발휘 합니다.

呼び記号	PRFRAD	DC	APMX	LF	DCON	刃数	在庫	図	標準価格 (円)
MP2MBR0025	0.25	0.5	1	45	4	2	●	1	2,950
MP2MBR0030	0.3	0.6	1.2	45	4	2	●	1	2,900
MP2MBR0040	0.4	0.8	1.6	45	4	2	●	1	2,900
MP2MBR0050	0.5	1	2.5	45	4	2	●	1	2,600
MP2MBR0060	0.6	1.2	2.5	45	4	2	●	1	3,680
MP2MBR0070	0.7	1.4	3	45	4	2	●	1	3,680
MP2MBR0075	0.75	1.5	4	45	4	2	●	1	3,190
MP2MBR0080	0.8	1.6	4	45	4	2	●	1	3,700
MP2MBR0090	0.9	1.8	5	45	4	2	●	1	4,820
MP2MBR0100	1	2	6	50	4	2	●	1	2,370
MP2MBR0125	1.25	2.5	6	50	4	2	●	1	4,090
MP2MBR0150S03	1.5	3	8	70	3	2	●	2	2,860
MP2MBR0150	1.5	3	8	70	6	2	●	1	2,860
MP2MBR0175	1.75	3.5	8	70	6	2	●	1	5,320
MP2MBR0200S04	2	4	8	70	4	2	●	2	3,270
MP2MBR0200	2	4	8	70	6	2	●	1	3,270
MP2MBR0250	2.5	5	12	80	6	2	●	1	3,930
MP2MBR0300	3	6	12	80	6	2	●	2	4,100
MP2MBR0400	4	8	14	90	8	2	●	2	7,200
MP2MBR0500	5	10	18	100	10	2	●	2	9,410
MP2MBR0600	6	12	22	110	12	2	●	2	13,900

ご用命の際は 呼び記号もしくは、MP2MB ○○R(×シャンク径○○mm) とご指定ください。

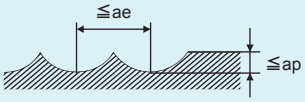
●：表準在庫品

2날 MSPLUS볼 엔드밀(S)쇼트샹크 MP2SSB

2날 MSPLUS볼 엔드밀(S) MP2SB 2날 MSPLUS볼 엔드밀(M) MP2MB

추천절삭조건

(mm)

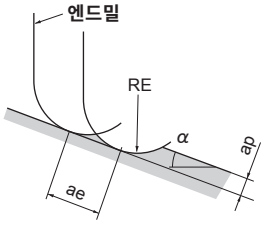
피삭재	탄소강,합금강(180−280HB)、합금공구강, 프리하든강,석출경화계스텐레스강 (<450HB) S45C、SCM440、NAK、PX5、SKD、SKT、SUS630、SUS631등						오스테나이트계스텐레스강(≦ 200HB) 티탄합금 SUS304、SUS316、Ti-6Al-4V등					
볼 반경 RE	α≦15°		α>15°		절입량 ap	절입량 ae	α≦15°		α>15°		切込み量 ap	切込み量 ae
	회전속도 (min^{-1})	이송속도 (mm/min)	회전속도 (min^{-1})	이송속도 (mm/min)			回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)		
R0.1	40000	300	40000	250	0.003	0.02	40000	300	40000	250	0.003	0.02
R0.15	40000	500	40000	350	0.007	0.03	40000	500	40000	350	0.007	0.03
R0.2	40000	1600	40000	1200	0.02	0.04	40000	1500	40000	1000	0.015	0.04
R0.25	40000	2400	40000	1400	0.025	0.05	40000	2100	40000	1200	0.02	0.05
R0.3	40000	3200	40000	1600	0.03	0.06	40000	2800	40000	1400	0.03	0.06
R0.4	40000	4800	40000	2400	0.05	0.08	40000	4600	40000	2100	0.04	0.08
R0.5	40000	5600	40000	3200	0.06	0.1	40000	5600	40000	3400	0.05	0.1
R0.75	40000	6500	40000	4000	0.09	0.15	40000	6500	36000	3600	0.08	0.15
R1	40000	6500	39000	4700	0.11	0.2	40000	6500	35000	4000	0.11	0.2
R1.25	40000	7000	33000	4500	0.12	0.25	40000	7400	29000	4000	0.12	0.25
R1.5	40000	7500	27000	4300	0.13	0.3	36000	6900	24000	3900	0.13	0.3
R2	32000	7500	20000	3600	0.15	0.4	28000	6900	18000	3100	0.15	0.4
R2.5	25000	6000	16000	2900	0.2	0.5	22000	6200	14000	2600	0.2	0.5
R3	21000	5800	13000	2600	0.25	0.6	18000	5400	11000	2300	0.25	0.6
R4	16000	4500	10000	2000	0.3	0.8	14000	4100	9000	1700	0.3	0.8
R5	13000	3600	8000	1700	0.5	1.0	11000	3300	7200	1300	0.5	1.0
R6	9000	2500	6000	1300	0.5	1.2	8100	2300	5400	1100	0.5	1.2
절입량 기준												

1) α란가공면의경사각입니다.

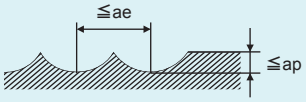
2) 절입이 작을 경우,회전속도와 이송속도를 한층 더 올릴 수 있습니다.

3) 기계나 가공물의 장착 강성이 업어 떨림 및 이상음이 발생할 경우,상기 표의 회전속도와 이송속도를 동일한 비율로 낮춰 동일한 비율로 낮춰 사용해 주십시오.

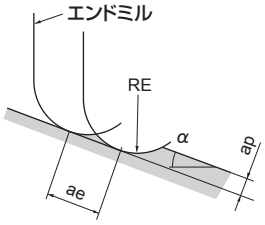
4) 오스테나이트계 스텐레스강,티탄합금의 절삭조건에 대해서는 상기 표의 고경도강(45~55 HRC) 의 조건에서 회전속도는 60%,이송속도는 45% 타켓으로 이용해 주십시오.



(mm)

被削材	고경도강 (45－55HRC) STAVAX、HPM、SKD61、SKT4등						동・동합금					
ボール半径 RE	α≦15°		α>15°		切込み量 ap	切込み量 ae	α≦15°		α>15°		切込み量 ap	切込み量 ae
	回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)			回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)		
R0.1	40000	300	40000	250	0.003	0.02	40000	300	40000	250	0.003	0.02
R0.15	40000	500	40000	350	0.007	0.03	40000	500	40000	350	0.007	0.03
R0.2	40000	1300	40000	950	0.015	0.04	40000	1300	40000	950	0.015	0.04
R0.25	40000	1900	40000	1100	0.02	0.05	40000	1900	40000	1100	0.02	0.05
R0.3	40000	2500	40000	1300	0.025	0.06	40000	2500	40000	1300	0.025	0.06
R0.4	40000	4000	40000	1900	0.04	0.08	40000	4000	40000	1900	0.04	0.08
R0.5	40000	5600	40000	3000	0.05	0.1	40000	5600	40000	3000	0.05	0.1
R0.75	40000	6500	32000	3200	0.08	0.15	40000	6500	32000	3200	0.08	0.15
R1	40000	6500	31000	3500	0.11	0.2	40000	6500	31000	3500	0.11	0.2
R1.25	36000	6500	26000	3500	0.12	0.25	36000	6500	26000	3500	0.12	0.25
R1.5	32000	6000	22000	3400	0.13	0.3	32000	6000	22000	3400	0.13	0.3
R2	25000	6000	16000	2700	0.15	0.4	25000	6000	16000	2700	0.15	0.6
R2.5	20000	5400	13000	2300	0.2	0.5	20000	5400	13000	2300	0.2	0.8
R3	17000	4700	10000	2000	0.25	0.6	17000	4700	10000	2000	0.25	0.9
R4	13000	3600	8000	1500	0.3	0.8	13000	3600	8000	1500	0.3	1.6
R5	10000	2900	6400	1200	0.5	1.0	10000	2900	6400	1200	0.5	2.0
R6	7200	2000	4800	1000	0.5	1.2	8500	2300	5300	1100	0.5	2.4
切込み量基準												

1）αとは、加工面の傾斜角です。
2）切込みが小さい場合、回転速度と送り速度をさらに上げることができます。
3）機械や加工物取付けの剛性がない場合、びびり・異常音が発生する場合は、上表の回転速度と送り速度を同じ割合で下げてご使用ください。
4）オーステナイト系ステンレス鋼、チタン合金の切削条件については上表の高硬度鋼（45～55 HRC）の条件から回転速度は60%、送り速度は45%を目安としてご利用ください。



MP2SDB
2날 MSPLUS강력형 볼 엔드밀(S)

탄소강,합금강,주철 (<30HRC)	공구강,프리하든강,고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	동합금	알루미늄합금
◎	◎	◎					

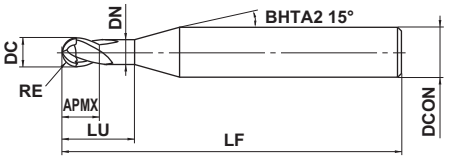


図1

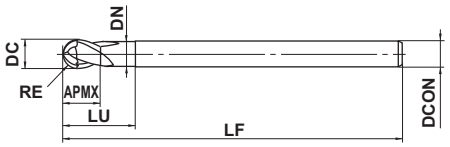


図2

R					
	0.5≦RE≦6				
	±0.01				
h5	4≦DCON≦6	DCON=8			
	0 - 0.005	0 - 0.006			
h6	DCON=10	DCON=12			
	0 - 0.009	0 - 0.011			

●강S자 절삭날 형상으로 내구성이 뛰어나, 단조형 등의 황삭 가공이나 중황삭에 최적입니다.

(mm)

呼び記号	RE	DC	APMX	LU	DN	LF	DCON	날수	재고	図	標準価格(円)
MP2SDBR0050	0.5	1	1	2	0.96	50	4	2	●	1	3,120
MP2SDBR0075S06	0.75	1.5	1.5	3	1.46	50	6	2	●	1	5,040
MP2SDBR0100	1	2	2	4	1.90	50	4	2	●	1	3,000
MP2SDBR0100S06	1	2	2	4	1.90	60	6	2	●	1	4,220
MP2SDBR0150	1.5	3	3	6	2.90	70	6	2	●	1	3,720
MP2SDBR0200	2	4	4	8	3.90	60	4	2	●	2	4,080
MP2SDBR0200S06	2	4	4	8	3.90	70	6	2	●	1	4,080
MP2SDBR0250	2.5	5	5	10	4.90	80	6	2	●	1	4,720
MP2SDBR0300	3	6	12	18	5.85	80	6	2	●	2	4,920
MP2SDBR0300A120	3	6	12	18	5.85	120	6	2	●	2	6,720
MP2SDBR0400	4	8	14	24	7.85	90	8	2	●	2	8,640
MP2SDBR0400A130	4	8	14	24	7.85	130	8	2	●	2	10,500
MP2SDBR0500	5	10	18	30	9.70	100	10	2	●	2	11,300
MP2SDBR0500A140	5	10	18	30	9.70	140	10	2	●	2	13,500
MP2SDBR0600	6	12	22	36	11.70	110	12	2	●	2	16,700
MP2SDBR0600A140	6	12	22	36	11.70	140	12	2	●	2	19,200

내마모성을 중시하는 가공에는 MSPLUS 엔드밀 시리즈의 MSP2SB를 추천 드립니다.

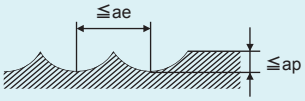
ご用命の際は 呼び記号もしくは、MP2SDB ○○R (全長○○mm×シャンク径○○mm) とご指定ください。

●：표준재고품

추천절삭조건

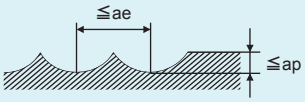
돌출길이DC x 5이하 (DC : 엔드밀 외경)

(mm)

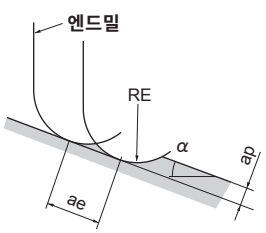
피삭재	탄소강,합금강 (180－280HB) 공구강,합금공구강,프리하든강 SKD61、SK、NAK등						고경도강 (45－55HRC) SKD61、SKT4등					
볼 반경 RE	α≦15°		α>15°		절입량 ap	절입량 ae	α≦15°		α>15°		切込み量 ap	切込み量 ae
	회전속도 (min^{-1})	이송속도 (mm/min)	회전속도 (min^{-1})	이송속도 (mm/min)			回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)		
R 0.5	40000	3900	36000	2100	0.1	0.25	40000	4300	36000	2200	0.1	0.25
R 0.75	40000	4200	36000	2600	0.15	0.35	40000	4700	36000	2700	0.15	0.35
R 1	40000	4500	36000	3100	0.2	0.5	40000	5000	36000	3300	0.2	0.5
R 1.5	37000	5300	24000	2700	0.3	0.75	37000	5800	24000	2800	0.3	0.75
R 2X4	24000	3200	15000	2000	0.25	0.7	19000	2800	13000	1600	0.25	0.7
R 2	30000	4900	19000	2500	0.4	1	28000	5000	19000	2400	0.4	1
R 2.5	25000	4500	16000	2300	0.5	1.3	22000	4200	16000	2200	0.5	1.25
R 3	22000	4300	14000	2200	0.6	1.8	18000	3800	12000	1800	0.6	1.5
R 4	19000	3900	12000	2000	0.8	2.4	15000	3200	9500	1600	0.8	2
R 5	15000	3300	9500	1800	1	3	11000	2500	7000	1400	1	2.5
R 6	12000	2550	8000	1600	1.2	3.6	9000	2000	6000	1300	1.2	3
절입량 기준												

돌출길이DC x 7이하 (DC : 엔드밀 외경)

(mm)

被削材	炭素鋼、合金鋼(180－280HB) 工具鋼、合金工具鋼、プリハードン鋼 SKD61、SK、NAK等						高硬度鋼 (45－55HRC) SKD61、SKT4等					
ボール半径 RE	α≦15°		α>15°		切込み量 ap	切込み量 ae	α≦15°		α>15°		切込み量 ap	切込み量 ae
	回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)			回転速度 (min^{-1})	送り速度 (mm/min)	回転速度 (min^{-1})	送り速度 (mm/min)		
R 3	10000	1500	6900	1000	0.2	1	8000	1400	5300	770	0.2	0.8
R 4	8000	1400	5600	900	0.3	1.5	6400	1300	4000	650	0.3	1.2
R 5	6000	1200	4100	740	0.4	2	4800	1100	3200	580	0.4	1.6
R 6	5000	1000	3400	600	0.45	2.4	4000	900	2700	490	0.45	2
切込み量 基準												

1) α란가공면의경사각입니다.
2) 절입이 작을 경우,회전속도와 이송속도를 한층 더 올릴 수 있습니다.
3) 기계나 가공물의 장착 강성이 없어 떨림 및 이상음이 발생할 경우,상기 표의 회전속도와 이송속도를 동일한 비율로 낮춰서 사용해 주십시오.



MP2XLB
2날MSPLUS롱넥볼엔드밀

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	합금강	알루미늄합금
◎	◎	◎		○	○	○	

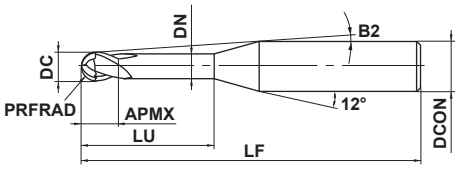
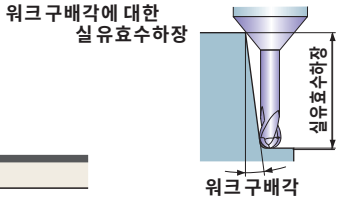


図1



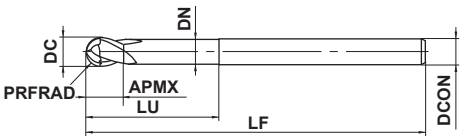


図2

R	0.05≦R≦3			
	±0.005			
h5	4≦D4≦6			
	0 -0.005			

●2날 롱넥 볼 엔드밀입니다.탄소강부터 열처리 강까지 폭 넓은 피삭재에서 뛰어난 성능을 발휘합니다.

単位 : mm

呼び記号	PRFRAD	DC	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장 30'	1°	2°	3°	標準価格(円)
MP2XLBR0005N003	0.05	0.1	0.08	0.3	0.085	11.6°	50	4	2	●	1	0.3	0.3	0.4	0.4	8,670
MP2XLBR0005N005	0.05	0.1	0.08	0.5	0.085	11.4°	50	4	2	●	1	0.5	0.5	0.6	0.7	9,350
MP2XLBR0010N005	0.1	0.2	0.15	0.5	0.18	11.5°	50	4	2	●	1	0.5	0.5	0.6	0.7	6,040
MP2XLBR0010N008	0.1	0.2	0.15	0.75	0.18	11.2°	50	4	2	●	1	0.8	0.8	0.9	1.0	6,040
MP2XLBR0010N010	0.1	0.2	0.15	1	0.18	10.9°	50	4	2	●	1	1.0	1.1	1.2	1.3	6,040
MP2XLBR0010N013	0.1	0.2	0.15	1.25	0.18	10.6°	50	4	2	●	1	1.3	1.4	1.5	1.7	6,040
MP2XLBR0010N015	0.1	0.2	0.15	1.5	0.18	10.4°	50	4	2	●	1	1.6	1.6	1.8	2.0	6,550
MP2XLBR0010N018	0.1	0.2	0.15	1.75	0.18	10.2°	50	4	2	●	1	1.8	1.9	2.1	2.3	7,230
MP2XLBR0010N020	0.1	0.2	0.15	2	0.18	9.9°	50	4	2	●	1	2.1	2.2	2.4	2.6	7,230
MP2XLBR0010N025	0.1	0.2	0.15	2.5	0.18	9.5°	50	4	2	●	1	2.6	2.7	3.0	3.3	7,910
MP2XLBR0015N005	0.15	0.3	0.24	0.5	0.28	11.5°	50	4	2	●	1	0.5	0.5	0.6	0.6	5,950
MP2XLBR0015N008	0.15	0.3	0.24	0.75	0.28	11.2°	50	4	2	●	1	0.8	0.8	0.9	1.0	5,950
MP2XLBR0015N010	0.15	0.3	0.24	1	0.28	10.9°	50	4	2	●	1	1.0	1.1	1.2	1.3	5,950
MP2XLBR0015N010S06	0.15	0.3	0.24	1	0.28	11.3°	50	6	2	●	1	1.0	1.1	1.2	1.3	8,080
MP2XLBR0015N013	0.15	0.3	0.24	1.25	0.28	10.7°	50	4	2	●	1	1.3	1.4	1.5	1.6	6,380
MP2XLBR0015N013S06	0.15	0.3	0.24	1.25	0.28	11.1°	50	6	2	●	1	1.3	1.4	1.5	1.6	8,840
MP2XLBR0015N015	0.15	0.3	0.24	1.5	0.28	10.4°	50	4	2	●	1	1.6	1.6	1.8	2.0	6,380
MP2XLBR0015N015S06	0.15	0.3	0.24	1.5	0.28	10.9°	50	6	2	●	1	1.6	1.6	1.8	2.0	8,840
MP2XLBR0015N018	0.15	0.3	0.24	1.75	0.28	10.2°	50	4	2	●	1	1.8	1.9	2.1	2.3	6,380
MP2XLBR0015N020	0.15	0.3	0.24	2	0.28	9.9°	50	4	2	●	1	2.1	2.2	2.4	2.6	6,380
MP2XLBR0015N025	0.15	0.3	0.24	2.5	0.28	9.5°	50	4	2	●	1	2.6	2.7	3.0	3.3	6,550
MP2XLBR0015N030	0.15	0.3	0.24	3	0.28	9.1°	50	4	2	●	1	3.1	3.3	3.6	4.0	6,550
MP2XLBR0015N035	0.15	0.3	0.24	3.5	0.28	8.7°	50	4	2	●	1	3.7	3.8	4.2	4.6	6,550
MP2XLBR0015N040	0.15	0.3	0.24	4	0.28	8.4°	50	4	2	●	1	4.2	4.4	4.8	5.3	6,800
MP2XLBR0020N005	0.2	0.4	0.3	0.5	0.37	11.6°	50	4	2	●	1	0.5	0.5	0.5	0.6	4,080
MP2XLBR0020N008	0.2	0.4	0.3	0.75	0.37	11.3°	50	4	2	●	1	0.7	0.8	0.9	0.9	4,080
MP2XLBR0020N010	0.2	0.4	0.3	1	0.37	11°	50	4	2	●	1	1.0	1.1	1.2	1.3	4,080
MP2XLBR0020N010S06	0.2	0.4	0.3	1	0.37	11.3°	50	6	2	●	1	1.0	1.1	1.2	1.3	5,950
MP2XLBR0020N015	0.2	0.4	0.3	1.5	0.37	10.4°	50	4	2	●	1	1.5	1.6	1.7	1.9	4,170
MP2XLBR0020N020	0.2	0.4	0.3	2	0.37	9.9°	50	4	2	●	1	2.1	2.2	2.3	2.6	4,250
MP2XLBR0020N020S06	0.2	0.4	0.3	2	0.37	10.6°	50	6	2	●	1	2.1	2.2	2.3	2.6	6,210
MP2XLBR0020N025	0.2	0.4	0.3	2.5	0.37	9.5°	50	4	2	●	1	2.6	2.7	2.9	3.3	4,420

ご用命の際は 呼び記号もしくは、MP2XLB ○○R×首下長○○mm×シャンク径○○mm とご指定ください。

●：표준재고품

単位 : mm

呼び記号	PRFRAD	DC	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
												30'	1°	2°	3°	
MP2XLBR0020N030	0.2	0.4	0.3	3	0.37	9.1°	50	4	2	●	1	3.1	3.2	3.5	3.9	4,680
MP2XLBR0020N035	0.2	0.4	0.3	3.5	0.37	8.7°	50	4	2	●	1	3.6	3.8	4.1	4.6	5,100
MP2XLBR0020N040	0.2	0.4	0.3	4	0.37	8.4°	50	4	2	●	1	4.2	4.3	4.7	5.2	5,100
MP2XLBR0020N045	0.2	0.4	0.3	4.5	0.37	8°	50	4	2	●	1	4.7	4.9	5.3	5.9	5,360
MP2XLBR0020N050	0.2	0.4	0.3	5	0.37	7.7°	50	4	2	●	1	5.2	5.4	5.9	6.6	5,360
MP2XLBR0020N055	0.2	0.4	0.3	5.5	0.37	7.5°	50	4	2	●	1	5.7	6.0	6.5	7.2	6,210
MP2XLBR0020N060	0.2	0.4	0.3	6	0.37	7.2°	50	4	2	●	1	6.2	6.5	7.1	7.9	6,210
MP2XLBR0025N010	0.25	0.5	0.37	1	0.47	11°	50	4	2	●	1	1.0	1.0	1.1	1.2	4,080
MP2XLBR0025N015	0.25	0.5	0.37	1.5	0.47	10.4°	50	4	2	●	1	1.5	1.6	1.7	1.9	4,080
MP2XLBR0025N015S06	0.25	0.5	0.37	1.5	0.47	11°	50	6	2	●	1	1.5	1.6	1.7	1.9	5,950
MP2XLBR0025N020	0.25	0.5	0.37	2	0.47	9.9°	50	4	2	●	1	2.1	2.1	2.3	2.6	4,080
MP2XLBR0025N020S06	0.25	0.5	0.37	2	0.47	10.6°	50	6	2	●	1	2.1	2.1	2.3	2.6	5,950
MP2XLBR0025N025	0.25	0.5	0.37	2.5	0.47	9.5°	50	4	2	●	1	2.6	2.7	2.9	3.2	4,080
MP2XLBR0025N025S06	0.25	0.5	0.37	2.5	0.47	10.3°	50	6	2	●	1	2.6	2.7	2.9	3.2	5,950
MP2XLBR0025N030	0.25	0.5	0.37	3	0.47	9.1°	50	4	2	●	1	3.1	3.2	3.5	3.9	4,080
MP2XLBR0025N030S06	0.25	0.5	0.37	3	0.47	10°	50	6	2	●	1	3.1	3.2	3.5	3.9	5,950
MP2XLBR0025N035	0.25	0.5	0.37	3.5	0.47	8.7°	50	4	2	●	1	3.6	3.8	4.1	4.6	4,080
MP2XLBR0025N040	0.25	0.5	0.37	4	0.47	8.3°	50	4	2	●	1	4.1	4.3	4.7	5.2	4,080
MP2XLBR0025N045	0.25	0.5	0.37	4.5	0.47	8°	50	4	2	●	1	4.7	4.9	5.3	5.9	4,170
MP2XLBR0025N050	0.25	0.5	0.37	5	0.47	7.7°	50	4	2	●	1	5.2	5.4	5.9	6.6	4,170
MP2XLBR0025N055	0.25	0.5	0.37	5.5	0.47	7.4°	50	4	2	●	1	5.7	6.0	6.5	7.2	4,250
MP2XLBR0025N060	0.25	0.5	0.37	6	0.47	7.2°	50	4	2	●	1	6.2	6.5	7.1	7.9	4,250
MP2XLBR0025N070	0.25	0.5	0.37	7	0.47	6.7°	50	4	2	●	1	7.3	7.6	8.3	9.2	5,100
MP2XLBR0025N080	0.25	0.5	0.37	8	0.47	6.3°	50	4	2	●	1	8.3	8.7	9.5	10.5	5,100
MP2XLBR0025N090	0.25	0.5	0.37	9	0.47	5.9°	50	4	2	●	1	9.4	9.8	10.7	11.9	5,700
MP2XLBR0025N100	0.25	0.5	0.37	10	0.47	5.6°	50	4	2	●	1	10.4	10.9	11.9	13.2	6,300
MP2XLBR0030N015	0.3	0.6	0.45	1.5	0.57	10.4°	50	4	2	●	1	1.5	1.6	1.8	2.0	3,000
MP2XLBR0030N015S06	0.3	0.6	0.45	1.5	0.57	11°	50	6	2	●	1	1.5	1.6	1.8	2.0	4,760
MP2XLBR0030N020	0.3	0.6	0.45	2	0.57	9.9°	50	4	2	●	1	2.1	2.2	2.4	2.6	3,000
MP2XLBR0030N020S06	0.3	0.6	0.45	2	0.57	10.6°	50	6	2	●	1	2.1	2.2	2.4	2.6	4,760
MP2XLBR0030N025	0.3	0.6	0.45	2.5	0.57	9.4°	50	4	2	●	1	2.6	2.7	3.0	3.3	3,000
MP2XLBR0030N030	0.3	0.6	0.45	3	0.57	9°	50	4	2	●	1	3.1	3.3	3.6	4.0	3,000
MP2XLBR0030N030S06	0.3	0.6	0.45	3	0.57	9.9°	50	6	2	●	1	3.1	3.3	3.6	4.0	4,850
MP2XLBR0030N035	0.3	0.6	0.45	3.5	0.57	8.6°	50	4	2	●	1	3.7	3.8	4.2	4.6	3,000
MP2XLBR0030N040	0.3	0.6	0.45	4	0.57	8.2°	50	4	2	●	1	4.2	4.4	4.8	5.3	3,000
MP2XLBR0030N040S06	0.3	0.6	0.45	4	0.57	9.3°	50	6	2	●	1	4.2	4.4	4.8	5.3	5,020
MP2XLBR0030N045	0.3	0.6	0.45	4.5	0.57	7.9°	50	4	2	●	1	4.7	4.9	5.4	5.9	3,000
MP2XLBR0030N050	0.3	0.6	0.45	5	0.57	7.6°	50	4	2	●	1	5.2	5.5	6.0	6.6	3,000
MP2XLBR0030N050S06	0.3	0.6	0.45	5	0.57	8.8°	50	6	2	●	1	5.2	5.5	6.0	6.6	5,020
MP2XLBR0030N055	0.3	0.6	0.45	5.5	0.57	7.3°	50	4	2	●	1	5.8	6.0	6.6	7.3	3,000
MP2XLBR0030N060	0.3	0.6	0.45	6	0.57	7.1°	50	4	2	●	1	6.3	6.6	7.2	7.9	3,000
MP2XLBR0030N060S06	0.3	0.6	0.45	6	0.57	8.3°	50	6	2	●	1	6.3	6.6	7.2	7.9	5,020
MP2XLBR0030N065	0.3	0.6	0.45	6.5	0.57	6.8°	50	4	2	●	1	6.8	7.1	7.8	8.6	3,740
MP2XLBR0030N070	0.3	0.6	0.45	7	0.57	6.6°	50	4	2	●	1	7.3	7.6	8.4	9.3	3,740
MP2XLBR0030N080	0.3	0.6	0.45	8	0.57	6.2°	50	4	2	●	1	8.4	8.7	9.6	10.6	4,420
MP2XLBR0030N080S06	0.3	0.6	0.45	8	0.57	7.6°	50	6	2	●	1	8.4	8.7	9.6	10.6	6,380
MP2XLBR0030N085	0.3	0.6	0.45	8.5	0.57	6°	50	4	2	●	1	8.9	9.3	10.2	11.3	4,680
MP2XLBR0030N090	0.3	0.6	0.45	9	0.57	5.8°	50	4	2	●	1	9.4	9.8	10.8	11.9	4,680
MP2XLBR0030N095	0.3	0.6	0.45	9.5	0.57	5.7°	50	4	2	●	1	9.9	10.4	11.4	12.6	4,680
MP2XLBR0030N100	0.3	0.6	0.45	10	0.57	5.5°	50	4	2	●	1	10.5	10.9	12.0	13.2	4,510

MP2XLB
2날 MSPLUS롱넥볼엔드밀

単位 : mm

呼び記号	PRFRAD	DC	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
												30'	1°	2°	3°	
MP2XLBR0030N110	0.3	0.6	0.45	11	0.57	5.2°	50	4	2	●	1	11.5	12.0	13.2	14.6	5,100
MP2XLBR0030N120	0.3	0.6	0.45	12	0.57	5°	50	4	2	●	1	12.5	13.1	14.4	15.9	5,100
MP2XLBR0040N020	0.4	0.8	0.6	2	0.77	9.9°	50	4	2	●	1	2.1	2.2	2.4	2.6	3,000
MP2XLBR0040N020S06	0.4	0.8	0.6	2	0.77	10.6°	50	6	2	●	1	2.1	2.2	2.4	2.6	4,760
MP2XLBR0040N024S06	0.4	0.8	0.6	2.4	0.77	10.3°	50	6	2	●	1	2.5	2.6	2.8	3.1	4,760
MP2XLBR0040N030	0.4	0.8	0.6	3	0.77	8.9°	50	4	2	●	1	3.1	3.3	3.6	3.9	3,000
MP2XLBR0040N030S06	0.4	0.8	0.6	3	0.77	9.9°	50	6	2	●	1	3.1	3.3	3.6	3.9	5,020
MP2XLBR0040N040	0.4	0.8	0.6	4	0.77	8.2°	50	4	2	●	1	4.2	4.4	4.8	5.2	3,000
MP2XLBR0040N040S06	0.4	0.8	0.6	4	0.77	9.3°	50	6	2	●	1	4.2	4.4	4.8	5.2	5,020
MP2XLBR0040N050	0.4	0.8	0.6	5	0.77	7.5°	50	4	2	●	1	5.2	5.5	6.0	6.6	3,000
MP2XLBR0040N060	0.4	0.8	0.6	6	0.77	6.9°	50	4	2	●	1	6.3	6.5	7.2	7.9	3,000
MP2XLBR0040N070	0.4	0.8	0.6	7	0.77	6.5°	50	4	2	●	1	7.3	7.6	8.4	9.2	3,000
MP2XLBR0040N080	0.4	0.8	0.6	8	0.77	6°	50	4	2	●	1	8.4	8.7	9.5	10.6	3,320
MP2XLBR0040N090	0.4	0.8	0.6	9	0.77	5.7°	50	4	2	●	1	9.4	9.8	10.7	11.9	4,420
MP2XLBR0040N100	0.4	0.8	0.6	10	0.77	5.4°	50	4	2	●	1	10.5	10.9	11.9	13.2	4,420
MP2XLBR0040N120	0.4	0.8	0.6	12	0.77	4.8°	50	4	2	●	1	12.5	13.1	14.3	15.9	5,440
MP2XLBR0050N030	0.5	1	0.75	3	0.96	8.7°	50	4	2	●	1	3.2	3.4	3.7	4.1	2,690
MP2XLBR0050N030S06	0.5	1	0.75	3	0.96	9.8°	50	6	2	●	1	3.2	3.4	3.7	4.1	4,170
MP2XLBR0050N040	0.5	1	0.75	4	0.96	7.9°	50	4	2	●	1	4.3	4.5	4.9	5.4	2,690
MP2XLBR0050N040S06	0.5	1	0.75	4	0.96	9.2°	50	6	2	●	1	4.3	4.5	4.9	5.4	4,590
MP2XLBR0050N050	0.5	1	0.75	5	0.96	7.3°	50	4	2	●	1	5.3	5.6	6.1	6.7	2,690
MP2XLBR0050N050S06	0.5	1	0.75	5	0.96	8.6°	50	6	2	●	1	5.3	5.6	6.1	6.7	4,590
MP2XLBR0050N060	0.5	1	0.75	6	0.96	6.7°	50	4	2	●	1	6.4	6.7	7.3	8.1	2,910
MP2XLBR0050N060S06	0.5	1	0.75	6	0.96	8.2°	50	6	2	●	1	6.4	6.7	7.3	8.1	4,850
MP2XLBR0050N070	0.5	1	0.75	7	0.96	6.2°	50	4	2	●	1	7.4	7.8	8.5	9.4	2,910
MP2XLBR0050N080	0.5	1	0.75	8	0.96	5.8°	50	4	2	●	1	8.5	8.9	9.7	10.7	2,910
MP2XLBR0050N080S06	0.5	1	0.75	8	0.96	7.3°	50	6	2	●	1	8.5	8.9	9.7	10.7	4,850
MP2XLBR0050N090	0.5	1	0.75	9	0.96	5.5°	50	4	2	●	1	9.5	10.0	10.9	12.0	3,000
MP2XLBR0050N100	0.5	1	0.75	10	0.96	5.1°	50	4	2	●	1	10.6	11.1	12.1	13.4	3,000
MP2XLBR0050N100S06	0.5	1	0.75	10	0.96	6.7°	60	6	2	●	1	10.6	11.1	12.1	13.4	4,850
MP2XLBR0050N120	0.5	1	0.75	12	0.96	4.6°	50	4	2	●	1	12.7	13.2	14.5	16.0	3,000
MP2XLBR0050N120S06	0.5	1	0.75	12	0.96	6.1°	60	6	2	●	1	12.7	13.2	14.5	16.0	4,850
MP2XLBR0050N140	0.5	1	0.75	14	0.96	4.2°	55	4	2	●	1	14.8	15.4	16.9	18.7	3,740
MP2XLBR0050N160	0.5	1	0.75	16	0.96	3.8°	55	4	2	●	1	16.9	17.6	19.3	21.3	4,420
MP2XLBR0050N160S06	0.5	1	0.75	16	0.96	5.2°	65	6	2	●	1	16.9	17.6	19.3	21.3	6,380
MP2XLBR0050N180	0.5	1	0.75	18	0.96	3.5°	55	4	2	●	1	18.9	19.8	21.7	24.0	4,420
MP2XLBR0050N200	0.5	1	0.75	20	0.96	3.3°	55	4	2	●	1	21.0	22.0	24.1	26.6	5,360
MP2XLBR0050N200S06	0.5	1	0.75	20	0.96	4.6°	65	6	2	●	1	21.0	22.0	24.1	26.6	7,570
MP2XLBR0060N060	0.6	1.2	0.9	6	1.16	6.6°	50	4	2	●	1	6.4	6.7	7.3	8.0	4,340
MP2XLBR0060N060S06	0.6	1.2	0.9	6	1.16	8.1°	55	6	2	●	1	6.4	6.7	7.3	8.0	6,160
MP2XLBR0060N080	0.6	1.2	0.9	8	1.16	5.7°	50	4	2	●	1	8.5	8.9	9.7	10.7	4,340
MP2XLBR0060N080S06	0.6	1.2	0.9	8	1.16	7.3°	55	6	2	●	1	8.5	8.9	9.7	10.7	6,160
MP2XLBR0060N100	0.6	1.2	0.9	10	1.16	5°	50	4	2	●	1	10.6	11.0	12.1	13.3	4,340
MP2XLBR0060N100S06	0.6	1.2	0.9	10	1.16	6.6°	55	6	2	●	1	10.6	11.0	12.1	13.3	6,160
MP2XLBR0060N120	0.6	1.2	0.9	12	1.16	4.4°	50	4	2	●	1	12.7	13.2	14.5	16.0	4,340
MP2XLBR0060N120S06	0.6	1.2	0.9	12	1.16	6°	65	6	2	●	1	12.7	13.2	14.5	16.0	6,160
MP2XLBR0060N140	0.6	1.2	0.9	14	1.16	4°	55	4	2	●	1	14.8	15.4	16.9	18.7	4,680
MP2XLBR0060N160	0.6	1.2	0.9	16	1.16	3.7°	55	4	2	●	1	16.9	17.6	19.3	21.3	5,100
MP2XLBR0060N160S06	0.6	1.2	0.9	16	1.16	5.1°	65	6	2	●	1	16.9	17.6	19.3	21.3	7,010
MP2XLBR0060N180	0.6	1.2	0.9	18	1.16	3.4°	60	4	2	●	1	18.9	19.8	21.7	24.0	5,530

* 간섭없음

● : 표준재고품

図1

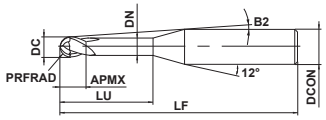
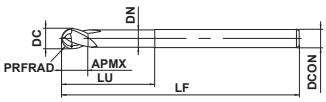


図2



単位 : mm

呼び記号	PRFRAD	DC	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장 30'	1°	2°	3°	標準価格(円)
MP2XLBR0060N200	0.6	1.2	0.9	20	1.16	3.1°	60	4	2	●	1	21.0	21.9	24.0	26.6	5,530
MP2XLBR0060N240	0.6	1.2	0.9	24	1.16	2.7°	60	4	2	●	1	25.2	26.3	28.8	*	7,230
MP2XLBR0070N080	0.7	1.4	1.05	8	1.34	5.5°	50	4	2	●	1	8.4	8.8	9.6	10.6	3,740
MP2XLBR0070N120	0.7	1.4	1.05	12	1.34	4.3°	50	4	2	●	1	12.6	13.1	14.4	15.9	3,740
MP2XLBR0070N160	0.7	1.4	1.05	16	1.34	3.5°	50	4	2	●	1	16.8	17.5	19.2	21.2	3,740
MP2XLBR0075N030	0.75	1.5	1.1	3	1.44	8.6°	50	4	2	●	1	3.1	3.3	3.6	3.9	2,800
MP2XLBR0075N040	0.75	1.5	1.1	4	1.44	7.7°	50	4	2	●	1	4.2	4.4	4.8	5.2	2,800
MP2XLBR0075N060	0.75	1.5	1.1	6	1.44	6.3°	50	4	2	●	1	6.3	6.6	7.2	7.9	2,800
MP2XLBR0075N060S06	0.75	1.5	1.1	6	1.44	8°	50	6	2	●	1	6.3	6.6	7.2	7.9	4,930
MP2XLBR0075N080	0.75	1.5	1.1	8	1.44	5.4°	50	4	2	●	1	8.4	8.8	9.6	10.6	3,000
MP2XLBR0075N080S06	0.75	1.5	1.1	8	1.44	7.2°	60	6	2	●	1	8.4	8.8	9.6	10.6	4,930
MP2XLBR0075N100	0.75	1.5	1.1	10	1.44	4.7°	50	4	2	●	1	10.5	11.0	12.0	13.2	3,200
MP2XLBR0075N100S06	0.75	1.5	1.1	10	1.44	6.5°	60	6	2	●	1	10.5	11.0	12.0	13.2	5,610
MP2XLBR0075N120	0.75	1.5	1.1	12	1.44	4.2°	50	4	2	●	1	12.6	13.1	14.4	15.9	3,500
MP2XLBR0075N120S06	0.75	1.5	1.1	12	1.44	5.9°	60	6	2	●	1	12.6	13.1	14.4	15.9	5,610
MP2XLBR0075N140	0.75	1.5	1.1	14	1.44	3.8°	55	4	2	●	1	14.7	15.3	16.8	18.5	3,500
MP2XLBR0075N160	0.75	1.5	1.1	16	1.44	3.4°	55	4	2	●	1	16.8	17.5	19.2	21.2	3,740
MP2XLBR0075N160S06	0.75	1.5	1.1	16	1.44	5°	60	6	2	●	1	16.8	17.5	19.2	21.2	5,610
MP2XLBR0075N180	0.75	1.5	1.1	18	1.44	3.1°	60	4	2	●	1	18.9	19.7	21.6	23.8	3,740
MP2XLBR0075N200	0.75	1.5	1.1	20	1.44	2.9°	60	4	2	●	1	21.0	21.9	23.9	*	3,740
MP2XLBR0075N220	0.75	1.5	1.1	22	1.44	2.7°	60	4	2	●	1	23.0	24.0	26.3	*	3,740
MP2XLBR0080N080	0.8	1.6	1.2	8	1.54	5.3°	55	4	2	●	1	8.4	8.8	9.6	10.5	4,340
MP2XLBR0080N120	0.8	1.6	1.2	12	1.54	4.1°	55	4	2	●	1	12.6	13.1	14.4	15.9	4,340
MP2XLBR0080N160	0.8	1.6	1.2	16	1.54	3.3°	55	4	2	●	1	16.8	17.5	19.1	21.2	4,340
MP2XLBR0080N200	0.8	1.6	1.2	20	1.54	2.8°	55	4	2	●	1	21.0	21.9	23.9	*	4,340
MP2XLBR0090N080	0.9	1.8	1.4	8	1.74	5.1°	55	4	2	●	1	8.4	8.8	9.6	10.5	3,740
MP2XLBR0090N120	0.9	1.8	1.4	12	1.74	3.9°	55	4	2	●	1	12.6	13.1	14.3	15.8	3,740
MP2XLBR0090N160	0.9	1.8	1.4	16	1.74	3.1°	55	4	2	●	1	16.8	17.5	19.1	21.1	3,740
MP2XLBR0090N200	0.9	1.8	1.4	20	1.74	2.6°	55	4	2	●	1	20.9	21.8	23.9	*	3,740
MP2XLBR0100N040	1	2	1.5	4	1.94	7.2°	50	4	2	●	1	4.2	4.4	4.7	5.2	2,690
MP2XLBR0100N040S06	1	2	1.5	4	1.94	9°	50	6	2	●	1	4.2	4.4	4.7	5.2	4,170
MP2XLBR0100N060	1	2	1.5	6	1.94	5.8°	50	4	2	●	1	6.3	6.6	7.1	7.8	2,690
MP2XLBR0100N060S06	1	2	1.5	6	1.94	7.8°	50	6	2	●	1	6.3	6.6	7.1	7.8	4,510
MP2XLBR0100N080	1	2	1.5	8	1.94	4.8°	50	4	2	●	1	8.4	8.8	9.5	10.5	2,910
MP2XLBR0100N080S06	1	2	1.5	8	1.94	6.9°	50	6	2	●	1	8.4	8.8	9.5	10.5	4,850
MP2XLBR0100N100	1	2	1.5	10	1.94	4.2°	50	4	2	●	1	10.5	10.9	11.9	13.1	2,910
MP2XLBR0100N100S06	1	2	1.5	10	1.94	6.2°	50	6	2	●	1	10.5	10.9	11.9	13.1	4,850
MP2XLBR0100N120	1	2	1.5	12	1.94	3.6°	50	4	2	●	1	12.6	13.1	14.3	15.8	2,910
MP2XLBR0100N120S06	1	2	1.5	12	1.94	5.6°	60	6	2	●	1	12.6	13.1	14.3	15.8	4,850
MP2XLBR0100N140	1	2	1.5	14	1.94	3.2°	55	4	2	●	1	14.7	15.3	16.7	18.4	2,910
MP2XLBR0100N140S06	1	2	1.5	14	1.94	5.1°	60	6	2	●	1	14.7	15.3	16.7	18.4	4,850
MP2XLBR0100N160	1	2	1.5	16	1.94	2.9°	55	4	2	●	1	16.8	17.5	19.1	*	2,910
MP2XLBR0100N160S06	1	2	1.5	16	1.94	4.7°	65	6	2	●	1	16.8	17.5	19.1	21.1	4,850
MP2XLBR0100N180	1	2	1.5	18	1.94	2.7°	55	4	2	●	1	18.9	19.7	21.5	*	3,230
MP2XLBR0100N180S06	1	2	1.5	18	1.94	4.3°	65	6	2	●	1	18.9	19.7	21.5	23.8	4,850
MP2XLBR0100N200	1	2	1.5	20	1.94	2.4°	65	4	2	●	1	20.9	21.8	23.9	*	3,230
MP2XLBR0100N200S06	1	2	1.5	20	1.94	4°	65	6	2	●	1	20.9	21.8	23.9	26.4	4,850
MP2XLBR0100N220	1	2	1.5	22	1.94	2.3°	65	4	2	●	1	23.0	24.0	26.3	*	4,420
MP2XLBR0100N250	1	2	1.5	25	1.94	2°	65	4	2	●	1	26.2	27.3	*	*	4,510
MP2XLBR0100N250S06	1	2	1.5	25	1.94	3.5°	90	6	2	●	1	26.2	27.3	29.9	33	6,380

* 간섭없음

MP2XLB
2날 MSPLUS롱넥볼엔드밀

単位 : mm

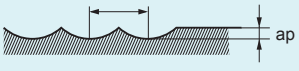
呼び記号	PRFRAD	DC	APMX	LU	DN	B2	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
												30'	1°	2°	3°	
MP2XLBR0100N300	1	2	1.5	30	1.94	1.7°	80	4	2	●	1	31.4	32.7	*	*	5,100
MP2XLBR0100N300S06	1	2	1.5	30	1.94	3°	90	6	2	●	1	31.4	32.7	35.9	*	7,230
MP2XLBR0100N350	1	2	1.5	35	1.94	1.5°	80	4	2	●	1	36.6	38.2	*	*	6,970
MP2XLBR0100N350S06	1	2	1.5	35	1.94	2.7°	90	6	2	●	1	36.6	38.2	41.8	*	9,440
MP2XLBR0100N400	1	2	1.5	40	1.94	1.4°	80	4	2	●	1	41.8	43.6	*	*	6,970
MP2XLBR0100N400S06	1	2	1.5	40	1.94	2.4°	90	6	2	●	1	41.8	43.6	47.8	*	9,440
MP2XLBR0125N100	1.25	2.5	1.9	10	2.4	3.5°	55	4	2	●	1	10.4	10.8	11.8	12.9	3,660
MP2XLBR0125N150	1.25	2.5	1.9	15	2.4	2.5°	55	4	2	●	1	15.6	16.3	17.8	*	4,340
MP2XLBR0125N200	1.25	2.5	1.9	20	2.4	2°	55	4	2	●	1	20.8	21.7	*	*	5,100
MP2XLBR0125N250	1.25	2.5	1.9	25	2.4	1.6°	70	4	2	●	1	26.1	27.2	*	*	5,440
MP2XLBR0125N300	1.25	2.5	1.9	30	2.4	1.4°	70	4	2	●	1	31.3	32.6	*	*	5,440
MP2XLBR0125N350	1.25	2.5	1.9	35	2.4	1.2°	70	4	2	●	1	36.5	38.1	*	*	6,290
MP2XLBR0150N060S03	1.5	3	2.3	6	2.9	—	60	3	2	●	1	*	*	*	*	2,980
MP2XLBR0150N080	1.5	3	2.3	8	2.9	6.3°	60	6	2	●	1	8.3	8.6	9.3	10.2	3,370
MP2XLBR0150N100	1.5	3	2.3	10	2.9	5.5°	60	6	2	●	1	10.4	10.8	11.7	12.9	3,370
MP2XLBR0150N120	1.5	3	2.3	12	2.9	4.9°	60	6	2	●	1	12.5	13.0	14.1	15.5	3,530
MP2XLBR0150N140	1.5	3	2.3	14	2.9	4.4°	60	6	2	●	1	14.6	15.2	16.5	18.2	3,920
MP2XLBR0150N160	1.5	3	2.3	16	2.9	4°	70	6	2	●	1	16.7	17.3	18.9	20.8	3,920
MP2XLBR0150N200	1.5	3	2.3	20	2.9	3.4°	70	6	2	●	1	20.8	21.7	23.7	26.1	3,760
MP2XLBR0150N250	1.5	3	2.3	25	2.9	2.8°	70	6	2	●	1	26.1	27.2	29.7	*	3,760
MP2XLBR0150N300	1.5	3	2.3	30	2.9	2.5°	70	6	2	●	1	31.3	32.6	35.7	*	4,760
MP2XLBR0150N350	1.5	3	2.3	35	2.9	2.2°	90	6	2	●	1	36.5	38.0	41.7	*	6,040
MP2XLBR0150N400	1.5	3	2.3	40	2.9	1.9°	90	6	2	●	1	41.7	43.5	*	*	7,480
MP2XLBR0175N150	1.75	3.5	2.6	15	3.4	3.8°	65	6	2	●	1	15.6	16.2	17.7	19.4	4,760
MP2XLBR0175N250	1.75	3.5	2.6	25	3.4	2.5°	65	6	2	●	1	26.0	27.1	29.6	*	5,100
MP2XLBR0175N350	1.75	3.5	2.6	35	3.4	1.9°	90	6	2	●	1	36.5	38.0	*	*	6,550
MP2XLBR0175N450	1.75	3.5	2.6	45	3.4	1.5°	90	6	2	●	1	46.9	48.9	*	*	7,910
MP2XLBR0200N080S04	2	4	3	8	3.9	—	65	4	2	●	1	*	*	*	*	3,310
MP2XLBR0200N100	2	4	3	10	3.9	4.5°	65	6	2	●	1	10.4	10.8	11.6	12.7	3,400
MP2XLBR0200N120	2	4	3	12	3.9	3.9°	65	6	2	●	1	12.5	12.9	14.0	15.4	3,920
MP2XLBR0200N140	2	4	3	14	3.9	3.4°	65	6	2	●	1	14.6	15.1	16.4	18.0	3,920
MP2XLBR0200N160	2	4	3	16	3.9	3.1°	70	6	2	●	1	16.6	17.3	18.8	20.7	3,920
MP2XLBR0200N200	2	4	3	20	3.9	2.6°	70	6	2	●	1	20.8	21.7	23.6	*	3,920
MP2XLBR0200N250	2	4	3	25	3.9	2.1°	70	6	2	●	1	26.0	27.1	29.6	*	3,920
MP2XLBR0200N300	2	4	3	30	3.9	1.8°	80	6	2	●	1	31.2	32.6	*	*	3,920
MP2XLBR0200N350	2	4	3	35	3.9	1.6°	80	6	2	●	1	36.5	38.0	*	*	4,700
MP2XLBR0200N400	2	4	3	40	3.9	1.4°	90	6	2	●	1	41.7	43.5	*	*	5,610
MP2XLBR0200N450	2	4	3	45	3.9	1.2°	90	6	2	●	1	46.9	48.9	*	*	7,230
MP2XLBR0200N500	2	4	3	50	3.9	1.1°	100	6	2	●	1	52.1	54.3	*	*	7,740
MP2XLBR0250N150	2.5	5	3.8	15	4.9	2°	70	6	2	●	1	15.6	16.2	*	*	6,520
MP2XLBR0250N200	2.5	5	3.8	20	4.9	1.5°	70	6	2	●	1	20.8	21.6	*	*	6,520
MP2XLBR0250N250	2.5	5	3.8	25	4.9	1.2°	70	6	2	●	1	26.0	27.1	*	*	6,520
MP2XLBR0250N300	2.5	5	3.8	30	4.9	1°	80	6	2	●	1	31.2	*	*	*	6,970
MP2XLBR0250N350	2.5	5	3.8	35	4.9	0.9°	80	6	2	●	1	36.4	*	*	*	6,970
MP2XLBR0250N400	2.5	5	3.8	40	4.9	0.8°	90	6	2	●	1	41.7	*	*	*	8,810
MP2XLBR0300N200	3	6	6	20	5.85	—	70	6	2	●	2	*	*	*	*	4,900
MP2XLBR0300N250	3	6	6	25	5.85	—	70	6	2	●	2	*	*	*	*	4,900
MP2XLBR0300N300	3	6	6	30	5.85	—	80	6	2	●	2	*	*	*	*	5,060
MP2XLBR0300N400	3	6	6	40	5.85	—	90	6	2	●	2	*	*	*	*	5,520
MP2XLBR0300N500	3	6	6	50	5.85	—	100	6	2	●	2	*	*	*	*	5,970

* 간섭없음

PRFRAD = 볼반경　　APMX = 날장　　DN = 목경　　LF = 전장
DC = 외경　　LU = 수하장　　B2 = 간섭각　　DCON = 샹크경

● : 표준재고품

추천절삭조건

피삭재		탄소강,합금강,합금공구강 프리하든강 석출경화계스텐레스강 S55C、NAK、HPM、SUS630등			고경도강(45—55HRC) SKD61、SKT4등			동· 동합금		
ボール半径 PRFRAD (mm)	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)
0.05	**0.3**	50000	200	0.002	50000	200	0.002	50000	200	0.004
	0.5	50000	200	0.001	50000	200	0.002	50000	200	0.002
0.1	**0.5**	50000	400	0.003	50000	320	0.003	50000	320	0.006
	1	50000	400	0.002	50000	320	0.002	50000	320	0.004
	1.5	40000	300	0.001	40000	240	0.001	40000	240	0.002
	2	40000	200	0.001	40000	160	0.001	40000	160	0.002
	2.5	40000	100	0.001	40000	80	0.001	40000	80	0.002
0.15	**1**	50000	600	0.007	50000	480	0.007	50000	480	0.014
	1.5	50000	600	0.005	50000	480	0.005	50000	480	0.01
	2	50000	600	0.003	50000	480	0.003	50000	480	0.006
	2.5	40000	400	0.003	40000	320	0.003	40000	320	0.006
	3	40000	300	0.002	40000	240	0.002	40000	240	0.004
	3.5	30000	250	0.002	30000	200	0.002	30000	200	0.004
	4	30000	200	0.002	30000	160	0.002	30000	160	0.004
0.2	**1**	50000	1800	0.015	50000	1400	0.015	50000	1400	0.03
	2	50000	1300	0.01	50000	1000	0.01	50000	1000	0.02
	3	50000	900	0.005	50000	700	0.005	50000	700	0.01
	4	40000	600	0.004	40000	480	0.004	40000	480	0.008
	5	40000	400	0.003	40000	320	0.003	40000	320	0.006
	6	30000	200	0.002	30000	160	0.002	30000	160	0.004
0.25	**2**	50000	2500	0.02	50000	2000	0.02	50000	2000	0.04
	3	50000	1500	0.015	50000	1200	0.015	50000	1200	0.03
	4	45000	1200	0.01	45000	950	0.01	45000	950	0.02
	5	45000	900	0.007	45000	700	0.007	45000	700	0.014
	6	36000	600	0.006	36000	480	0.006	36000	480	0.012
	7	32000	400	0.005	32000	320	0.005	32000	320	0.01
	8	32000	300	0.003	32000	240	0.003	32000	240	0.006
	10	26000	200	0.002	26000	160	0.002	26000	160	0.004
0.3	**2**	50000	3500	0.03	50000	2800	0.03	50000	2800	0.06
	3	50000	3500	0.03	50000	2800	0.03	50000	2800	0.06
	4	44000	2500	0.02	44000	2000	0.02	44000	2000	0.04
	5	37000	1200	0.01	37000	950	0.01	37000	950	0.02
	6	37000	1000	0.008	37000	800	0.008	37000	800	0.016
	7	35000	750	0.008	35000	600	0.008	35000	600	0.016
	8	35000	600	0.006	35000	480	0.006	35000	480	0.012
	9	30000	500	0.004	30000	400	0.004	30000	400	0.008
	10	30000	500	0.003	30000	400	0.003	30000	400	0.006
	11	22000	300	0.002	22000	240	0.002	22000	240	0.004
	12	22000	200	0.002	22000	160	0.002	22000	160	0.004
0.4	**2**	50000	4400	0.04	50000	3500	0.04	50000	3500	0.08
	3	50000	4000	0.04	50000	3200	0.04	50000	3200	0.08
	4	50000	4000	0.02	50000	3200	0.02	50000	3200	0.04
	5	35000	2400	0.02	35000	1900	0.02	35000	1900	0.04
	6	35000	2400	0.02	35000	1900	0.02	35000	1900	0.04
	7	30000	1500	0.015	30000	1200	0.015	30000	1200	0.03
	8	30000	1500	0.01	30000	1200	0.01	30000	1200	0.02
	10	30000	700	0.008	30000	560	0.008	30000	560	0.016
	12	22000	500	0.006	22000	400	0.006	22000	400	0.012
切込み量基準		≦0.1R (R≦1) ≦0.2R (R＞1) 								

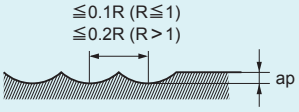
R：ボール半径

1) 가공면의 경사각이 큰 경우나 코너부 등 절삭부하가 커지는 가공에서는 상기 표의 회전속도와 이송속도를 낮춰서 사용 해 주십시오.
2) 소경 사이즈로 가공할 경우, 오일 미스트 사용을 추천 드립니다.
3) 절입량 ap가 작을 경우, 회전속도와 이송속도를 한층 더 올릴 수 있습니다.
4) 돌출 길이(가공깊이), 여유분, 기계에 따라 조건에 꽤 차이가 나는 경우가 있으므로, 상기 표는 타켓으로 해 주십시오.
5) 55HRC를 초과하는 고경도강에는 VF-2XLB를 사용 해 주십시오.
6) 오스테나이트계 스텐레스강, 티탄합금의 절삭 조건에 대해서는 상기 표의 고경도강(45~55HRC)의 조건에서 회전속도는 60^, 이송속도는 45%를 타겟으로 이용 해 주십시오.

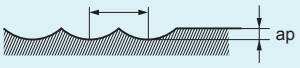
추천절삭조건

피삭재		탄소강,합금강,합금공구강 프리하든강, 석출경화계스텐레스강 S55C、NAK、HPM、SUS630等			고경도강(45—55HRC) SKD61、SKT4等			동· 동합금		
ボール半径 PRFRAD (mm)	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)
0.5	3	40000	4000	0.05	40000	3200	0.05	40000	3200	0.1
	4	40000	4000	0.05	40000	3200	0.05	40000	3200	0.1
	6	35000	3000	0.03	35000	2400	0.03	35000	2400	0.06
	8	30000	2000	0.02	30000	1600	0.02	30000	1600	0.04
	10	20000	1000	0.01	20000	800	0.01	20000	800	0.02
	12	20000	1000	0.01	20000	800	0.01	20000	800	0.02
	14	18000	600	0.008	18000	480	0.008	18000	480	0.016
	16	18000	500	0.008	18000	400	0.008	18000	400	0.016
	18	13000	300	0.005	13000	240	0.005	13000	240	0.01
	20	13000	250	0.005	13000	200	0.005	13000	200	0.01
0.6	6	40000	4400	0.04	40000	3500	0.04	40000	3500	0.08
	8	40000	4000	0.04	40000	3200	0.04	40000	3200	0.08
	10	27000	1900	0.02	27000	1500	0.02	27000	1500	0.04
	12	16000	1400	0.02	16000	1100	0.02	16000	1100	0.04
	18	15000	700	0.008	15000	560	0.008	15000	560	0.016
	24	11000	300	0.006	11000	240	0.006	11000	240	0.012
0.7	8	40000	4000	0.05	40000	3200	0.05	40000	2560	0.1
	12	26000	2000	0.04	26000	1600	0.04	26000	1280	0.08
	16	17000	1400	0.03	17000	1120	0.03	17000	896	0.06
0.75	6	40000	6000	0.07	36000	4300	0.07	36000	4300	0.14
	8	40000	6000	0.07	36000	4300	0.07	36000	4300	0.14
	10	40000	5000	0.06	36000	3600	0.06	36000	3600	0.12
	12	32000	3400	0.04	29000	2400	0.04	29000	2400	0.08
	16	15000	1400	0.03	15000	1100	0.03	15000	1100	0.06
	20	12000	900	0.02	12000	720	0.02	12000	720	0.04
	30	9000	400	0.01	9000	320	0.01	9000	320	0.02
0.8	8	40000	6000	0.08	32000	3800	0.08	32000	3800	0.16
	12	36000	4500	0.06	29000	2800	0.06	29000	2800	0.12
	16	14000	1400	0.04	14000	1100	0.04	14000	1100	0.08
	20	12000	1000	0.03	12000	800	0.03	12000	800	0.06
0.9	8	40000	6600	0.09	32000	4200	0.09	32000	4200	0.18
	12	40000	5000	0.07	32000	3200	0.07	32000	3200	0.14
	16	28000	2800	0.04	22000	1800	0.04	22000	1800	0.08
	20	10000	800	0.03	10000	640	0.03	10000	640	0.06
1	4	40000	8000	0.1	32000	5000	0.1	32000	5000	0.2
	6	40000	8000	0.1	32000	5000	0.1	32000	5000	0.2
	8	40000	6000	0.1	32000	3800	0.1	32000	3800	0.2
	10	40000	5000	0.08	32000	3200	0.08	32000	3200	0.16
	12	40000	5000	0.08	32000	3200	0.08	32000	3200	0.16
	16	32000	3500	0.05	26000	2200	0.05	26000	2200	0.1
	20	10000	1000	0.04	10000	800	0.04	10000	800	0.08
	25	10000	1000	0.04	10000	800	0.04	10000	800	0.08
	30	10000	800	0.02	10000	640	0.02	10000	640	0.04
	35	10000	600	0.02	10000	480	0.02	10000	480	0.04
	40	8000	400	0.01	8000	320	0.01	8000	320	0.02

切込み量基準



R：ボール半径

피삭재		탄소강,합금강,,합금공구강 프리하든강 석출경화계스텐레스강 S55C、NAK、HPM、SUS630等			고경도강(45—55HRC) SKD61、SKT4等			동・동합금		
ボール半径 PRFRAD (mm)	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)
1.25	10	36000	6000	0.12	29000	3800	0.12	29000	3800	0.24
	15	32000	4500	0.1	26000	2900	0.1	26000	2900	0.2
	20	26000	3200	0.07	21000	2000	0.07	21000	2000	0.14
	25	12000	1400	0.06	8000	720	0.06	8000	720	0.12
	30	8000	900	0.04	8000	700	0.04	8000	700	0.08
	35	8000	800	0.02	8000	640	0.02	8000	510	0.04
1.5	6	32000	7000	0.15	26000	4500	0.15	22000	3800	0.3
	10	32000	7000	0.15	26000	4500	0.15	22000	3800	0.3
	16	32000	5000	0.1	26000	3200	0.1	22000	2700	0.2
	20	27000	3800	0.1	22000	2400	0.1	22000	2400	0.2
	25	21000	2700	0.08	17000	1700	0.08	17000	1700	0.16
	30	10000	700	0.08	6000	560	0.08	6000	560	0.16
	35	6000	700	0.06	6000	560	0.06	6000	560	0.12
	40	6000	600	0.04	6000	480	0.04	6000	480	0.08
1.75	15	27500	4400	0.13	22000	2800	0.13	18000	2300	0.26
	25	23000	3600	0.1	18000	2200	0.1	18000	2200	0.2
	35	10000	1400	0.08	10000	1100	0.08	10000	1100	0.16
	45	7500	900	0.04	7500	720	0.04	7500	720	0.08
2	10	24000	6000	0.2	19000	3800	0.2	16000	3200	0.4
	20	24000	3800	0.15	19000	2400	0.15	16000	2000	0.3
	30	20000	3000	0.1	16000	1900	0.1	16000	1900	0.2
	40	12000	1700	0.1	12000	1400	0.1	12000	1400	0.2
	50	8000	1000	0.05	8000	800	0.05	8000	800	0.1
2.5	20	22000	6000	0.2	18000	3800	0.2	13000	2800	0.4
	25	22000	4400	0.2	18000	2800	0.2	13000	2000	0.4
	30	22000	3800	0.15	18000	2400	0.15	13000	1700	0.3
	40	22000	3600	0.1	18000	2300	0.1	13000	1600	0.2
3	20	20000	6000	0.2	16000	3800	0.2	11000	2600	0.4
	30	20000	6000	0.2	16000	3800	0.2	11000	2600	0.4
	40	20000	4500	0.15	16000	2800	0.15	11000	2000	0.3
	50	20000	3000	0.15	16000	1900	0.15	11000	1300	0.3
切込み量基準		≦0.1R (R≦1) ≦0.2R (R＞1)  R：ボール半径								

MP3XB
3날MSPLUS테이퍼넥볼엔드밀

탄소강·합금강·주철 (<30HRC)	공구강·프리하든강·고경도강 (≦45HRC)	고경도강 (≦55HRC)	고경도강 (>55HRC)	오스테나이트계 스텐레스강	티탄합금 내열합금	합금강	알루미늄합금
◎	◎	◎		○	○	○	

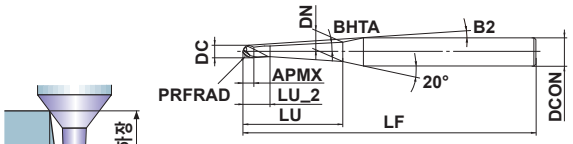


図1

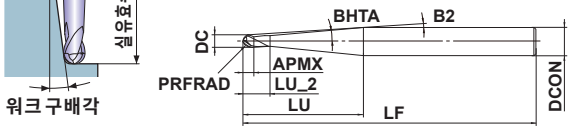


図2

R	PRFRAD≦3	4≦PRFRAD			
	±0.005	±0.010			
h5	DCON=6	DCON=8			
	0 -0.005	0 -0.006			
h6	DCON=10	12≦DCON			
	0 -0.009	0 -0.011			

- 단조형(40–52HRC)의 깊은 황삭 가공이나 중황삭 가공에 최적입니다.
- 고강성·3날· 강 비틀림으로 고이송,고절입의 고능률 가공이 가능합니다.

単位 : mm

呼び記号	PRFRAD	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장 30'	1°	2°	3°	標準価格(円)
MP3XBR0050N008T05	0.5	1	0.5°	0.8	8	2.3	9.3°	1.04	60	6	3	●	1	8.5	8.8	9.3	9.8	6,500
MP3XBR0050N012T05	0.5	1	0.5°	0.8	12	2.3	7.5°	1.1	60	6	3	●	1	12.6	13	13.6	14.4	7,000
MP3XBR0050N016T05	0.5	1	0.5°	0.8	16	2.3	6.3°	1.18	60	6	3	●	1	16.6	17.1	18	18.9	7,400
MP3XBR0050N020T05	0.5	1	0.5°	0.8	20	2.3	5.4°	1.24	60	6	3	●	1	20.6	21.2	22.3	23.5	8,200
MP3XBR0050N025T05	0.5	1	0.5°	0.8	25	2.3	4.6°	1.34	70	6	3	●	1	25.7	26.3	27.7	29.3	8,700
MP3XBR0050N030T05	0.5	1	0.5°	0.8	30	2.3	4°	1.42	70	6	3	●	1	30.7	31.5	33.1	35	9,200
MP3XBR0050N050T05	0.5	1	0.5°	0.8	50	2.3	2.6°	1.78	90	6	3	●	1	50.8	52.1	54.8	*	11,500
MP3XBR0050N010T10	0.5	1	1°	0.8	10	2.3	8.4°	1.2	60	6	3	●	1	—	10.6	11.2	11.8	6,900
MP3XBR0050N016T10	0.5	1	1°	0.8	16	2.3	6.4°	1.42	60	6	3	●	1	—	16.7	17.6	18.5	7,400
MP3XBR0050N020T10	0.5	1	1°	0.8	20	2.3	5.5°	1.56	60	6	3	●	1	—	20.7	21.8	23	8,200
MP3XBR0050N025T10	0.5	1	1°	0.8	25	2.3	4.7°	1.74	70	6	3	●	1	—	25.7	27.1	28.6	8,700
MP3XBR0050N030T10	0.5	1	1°	0.8	30	2.3	4.1°	1.9	70	6	3	●	1	—	30.8	32.4	34.2	9,200
MP3XBR0050N035T10	0.5	1	1°	0.8	35	2.3	3.6°	2.08	90	6	3	●	1	—	35.8	37.7	39.8	9,800
MP3XBR0050N050T10	0.5	1	1°	0.8	50	2.3	2.7°	2.6	90	6	3	●	1	—	50.9	53.6	*	11,500
MP3XBR0050N010T15	0.5	1	1.5°	0.8	10	2.3	8.5°	1.34	60	6	3	●	1	—	—	11	11.6	6,900
MP3XBR0050N016T15	0.5	1	1.5°	0.8	16	2.3	6.5°	1.66	60	6	3	●	1	—	—	17.2	18.1	7,400
MP3XBR0050N020T15	0.5	1	1.5°	0.8	20	2.3	5.6°	1.86	60	6	3	●	1	—	—	21.3	22.5	8,200
MP3XBR0050N023T15	0.5	1	1.5°	0.8	23	2.3	5°	2.02	70	6	3	●	1	—	—	24.4	25.7	8,500
MP3XBR0050N025T15	0.5	1	1.5°	0.8	25	2.3	4.7°	2.12	70	6	3	●	1	—	—	26.5	27.9	8,700
MP3XBR0050N010T30	0.5	1	3°	0.8	10	2.3	8.8°	1.74	60	6	3	●	1	—	—	—	10.8	6,900
MP3XBR0050N020T30	0.5	1	3°	0.8	20	2.3	5.9°	2.8	60	6	3	●	1	—	—	—	20.9	8,200
MP3XBR0050N030T30	0.5	1	3°	0.8	30	2.3	4.4°	3.84	70	6	3	●	1	—	—	—	31	9,200
MP3XBR0050N042T30	0.5	1	3°	0.8	42	2.3	3.4°	5.1	90	6	3	●	1	—	—	—	43	10,600
MP3XBR0050N025T50	0.5	1	5°	0.8	25	2.3	5.4°	4.92	60	6	3	●	1	—	—	—	—	8,700
MP3XBR0075N010T05	0.75	1.5	0.5°	1.2	10	2.7	7.8°	1.56	60	6	3	●	1	10.6	10.9	11.4	12	7,110
MP3XBR0075N016T05	0.75	1.5	0.5°	1.2	16	2.7	5.8°	1.68	60	6	3	●	1	16.6	17.1	17.9	18.9	7,850
MP3XBR0075N020T05	0.75	1.5	0.5°	1.2	20	2.7	5°	1.74	60	6	3	●	1	20.6	21.2	22.3	23.5	8,450
MP3XBR0075N030T05	0.75	1.5	0.5°	1.2	30	2.7	3.7°	1.92	80	6	3	●	1	30.7	31.5	33.1	35	10,700
MP3XBR0075N010T10	0.75	1.5	1°	1.2	10	2.7	7.9°	1.7	60	6	3	●	1	—	10.6	11.2	11.8	7,110
MP3XBR0075N016T10	0.75	1.5	1°	1.2	16	2.7	5.9°	1.9	60	6	3	●	1	—	16.7	17.6	18.5	7,850
MP3XBR0075N020T10	0.75	1.5	1°	1.2	20	2.7	5.1°	2.04	60	6	3	●	1	—	20.7	21.8	23	8,450
MP3XBR0075N030T10	0.75	1.5	1°	1.2	30	2.7	3.7°	2.4	80	6	3	●	1	—	30.8	32.4	34.2	10,700

* 간섭없음

ご用命の際は 呼び記号もしくは、MP3XB ○○R×首部テーパ半角○○°×首下長○○mm とご指定ください。

●：표준재고품

単位 : mm

呼び記号	PRFRAD	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장 30'	1°	2°	3°	標準価格(円)
MP3XBR0075N010T15	0.75	1.5	1.5°	1.2	10	2.7	8°	1.82	60	6	3	●	1	—	—	11	11.6	7,110
MP3XB**R0075N016T15**	0.75	1.5	1.5°	1.2	16	2.7	6°	2.14	60	6	3	●	1	—	—	17.2	18.1	7,850
MP3XB**R0075N020T15**	0.75	1.5	1.5°	1.2	20	2.7	5.1°	2.34	60	6	3	●	1	—	—	21.3	22.5	8,450
MP3XB**R0075N025T15**	0.75	1.5	1.5°	1.2	25	2.7	4.4°	2.6	80	6	3	●	1	—	—	26.5	27.9	9,550
MP3XB**R0075N030T15**	0.75	1.5	1.5°	1.2	30	2.7	3.8°	2.86	80	6	3	●	1	—	—	31.6	33.4	10,700
MP3XB**R0075N046T30**	0.75	1.5	3°	1.2	46	2.7	2.9°	—	80	6	3	●	2	—	—	—	*	11,900
MP3XB**R0100N016T05**	1	2	0.5°	1.6	16	3.6	5.2°	2.12	60	6	3	●	1	17	17.6	18.6	19.5	7,490
MP3XB**R0100N020T05**	1	2	0.5°	1.6	20	3.6	4.5°	2.18	60	6	3	●	1	21.1	21.8	22.9	24.1	7,800
MP3XB**R0100N030T05**	1	2	0.5°	1.6	30	3.6	3.3°	2.36	70	6	3	●	1	31.1	32.1	33.7	35.6	9,300
MP3XB**R0100N035T05**	1	2	0.5°	1.6	35	3.6	2.9°	2.44	80	6	3	●	1	36.2	37.2	39.2	*	11,500
MP3XB**R0100N040T05**	1	2	0.5°	1.6	40	3.6	2.6°	2.54	80	6	3	●	1	41.2	42.4	44.6	*	12,600
MP3XB**R0100N016T10**	1	2	1°	1.6	16	3.6	5.3°	2.34	60	6	3	●	1	—	17.1	18.2	19.1	7,490
MP3XB**R0100N020T10**	1	2	1°	1.6	20	3.6	4.5°	2.48	60	6	3	●	1	—	21.2	22.4	23.6	7,800
MP3XB**R0100N025T10**	1	2	1°	1.6	25	3.6	3.8°	2.64	70	6	3	●	1	—	26.2	27.7	29.2	8,640
MP3XB**R0100N030T10**	1	2	1°	1.6	30	3.6	3.3°	2.82	70	6	3	●	1	—	31.3	33	34.8	9,300
MP3XB**R0100N035T10**	1	2	1°	1.6	35	3.6	3°	3	80	6	3	●	1	—	36.3	38.3	40.4	11,500
MP3XB**R0100N040T10**	1	2	1°	1.6	40	3.6	2.7°	3.18	80	6	3	●	1	—	41.3	43.6	*	12,600
MP3XB**R0100N050T10**	1	2	1°	1.6	50	3.6	2.2°	3.52	110	6	3	●	1	—	51.4	54.2	*	13,900
MP3XB**R0100N070T10**	1	2	1°	1.6	70	3.6	1.7°	4.22	110	6	3	●	1	—	71.5	*	*	15,500
MP3XB**R0100N016T15**	1	2	1.5°	1.6	16	3.6	5.4°	2.54	60	6	3	●	1	—	—	22.8	18.7	7,490
MP3XB**R0100N020T15**	1	2	1.5°	1.6	20	3.6	4.6°	2.76	60	6	3	●	1	—	—	21.9	23.1	7,800
MP3XB**R0100N025T15**	1	2	1.5°	1.6	25	3.6	3.9°	3.02	70	6	3	●	1	—	—	27.1	28.5	8,640
MP3XB**R0100N030T15**	1	2	1.5°	1.6	30	3.6	3.4°	3.28	70	6	3	●	1	—	—	32.2	34	9,300
MP3XB**R0100N035T15**	1	2	1.5°	1.6	35	3.6	3°	3.54	80	6	3	●	1	—	—	37.4	39.4	11,500
MP3XB**R0100N040T15**	1	2	1.5°	1.6	40	3.6	2.7°	3.8	80	6	3	●	1	—	—	42.6	*	12,600
MP3XB**R0100N020T30**	1	2	3°	1.6	20	3.6	4.8°	3.62	60	6	3	●	1	—	—	—	20.5	7,800
MP3XB**R0100N030T30**	1	2	3°	1.6	30	3.6	3.6°	4.66	70	6	3	●	1	—	—	—	30.6	9,300
MP3XB**R0100N042T30**	1	2	3°	1.6	42	3.6	2.8°	—	80	6	3	●	2	—	—	—	*	13,100
MP3XB**R0100N027T50**	1	2	5°	1.6	27	3.6	4.3°	—	60	6	3	●	2	—	—	—	—	9,000
MP3XB**R0150N010T05**	1.5	3	0.5°	2.4	10	5.4	5.7°	2.98	60	6	3	●	1	11	11.4	12	12.6	7,600
MP3XB**R0150N020T05**	1.5	3	0.5°	2.4	20	5.4	3.5°	3.16	60	6	3	●	1	21.1	21.8	22.9	24.1	8,950
MP3XB**R0150N030T05**	1.5	3	0.5°	2.4	30	5.4	2.6°	3.32	70	6	3	●	1	31.2	32.1	33.7	*	10,500
MP3XB**R0150N040T05**	1.5	3	0.5°	2.4	40	5.4	2°	3.5	80	6	3	●	1	41.3	42.4	44.6	*	11,600
MP3XB**R0150N050T05**	1.5	3	0.5°	2.4	50	5.4	1.7°	3.68	90	6	3	●	1	51.3	52.7	*	*	12,900
MP3XB**R0150N020T10**	1.5	3	1°	2.4	20	5.4	3.6°	3.4	60	6	3	●	1	—	21.3	22.4	23.6	8,950
MP3XB**R0150N030T10**	1.5	3	1°	2.4	30	5.4	2.6°	3.76	70	6	3	●	1	—	31.3	33	*	10,500
MP3XB**R0150N035T10**	1.5	3	1°	2.4	35	5.4	2.3°	3.94	80	6	3	●	1	—	36.4	38.3	*	11,000
MP3XB**R0150N040T10**	1.5	3	1°	2.4	40	5.4	2.1°	4.1	80	6	3	●	1	—	41.4	43.6	*	10,900
MP3XB**R0150N050T10**	1.5	3	1°	2.4	50	5.4	1.7°	4.46	90	6	3	●	1	—	51.5	*	*	12,900
MP3XB**R0150N060T10**	1.5	3	1°	2.4	60	5.4	1.5°	4.8	110	6	3	●	1	—	61.5	*	*	14,500
MP3XB**R0150N070T10**	1.5	3	1°	2.4	70	5.4	1.3°	5.16	110	6	3	●	1	—	71.6	*	*	16,300
MP3XB**R0150N020T15**	1.5	3	1.5°	2.4	20	5.4	3.7°	3.66	60	6	3	●	1	—	—	22	23.2	8,950
MP3XB**R0150N030T15**	1.5	3	1.5°	2.4	30	5.4	2.7°	4.18	70	6	3	●	1	—	—	32.3	*	10,500
MP3XB**R0150N035T15**	1.5	3	1.5°	2.4	35	5.4	2.4°	4.46	70	6	3	●	1	—	—	37.5	*	11,000
MP3XB**R0150N040T15**	1.5	3	1.5°	2.4	40	5.4	2.1°	4.72	80	6	3	●	1	—	—	42.6	*	11,600
MP3XB**R0150N045T15**	1.5	3	1.5°	2.4	45	5.4	1.9°	4.98	80	6	3	●	1	—	—	*	*	11,600
MP3XB**R0150N052T15**	1.5	3	1.5°	2.4	52	5.4	1.7°	5.34	90	6	3	●	1	—	—	*	*	13,200
MP3XB**R0150N064T15**	1.5	3	1.5°	2.4	64	5.4	1.4°	—	110	6	3	●	2	—	—	*	*	15,400
MP3XB**R0150N025T30**	1.5	3	3°	2.4	25	5.4	3.3°	4.96	60	6	3	●	1	—	—	—	26.8	9,800
MP3XB**R0150N034T30**	1.5	3	3°	2.4	34	5.4	2.6°	—	70	6	3	●	2	—	—	—	*	10,900

* 간섭없음

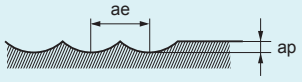
MP3XB
3날MSPLUS테이퍼넥볼엔드밀

呼び記号	PRFRAD	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	刃数	在庫	図	워크구배각에 대한 실유효수하장				標準価格(円)
														30'	1°	2°	3°	
MP3XBR0150N040T30	1.5	3	3°	2.4	40	5.4	3.4°	6.52	90	8	3	●	1	—	—	—	41.9	12,400
MP3XBR0150N054T30	1.5	3	3°	2.4	54	5.4	2.7°	—	90	8	3	●	2	—	—	—	*	14,700
MP3XBR0200N030T05	2	4	0.5°	3.2	30	6.2	1.8°	4.32	70	6	3	●	1	31.2	32.1	*	*	11,000
MP3XBR0200N040T05	2	4	0.5°	3.2	40	6.2	1.4°	4.48	80	6	3	●	1	41.3	42.4	*	*	13,000
MP3XBR0200N060T05	2	4	0.5°	3.2	60	6.2	1°	4.84	100	6	3	●	1	61.4	63	*	*	16,900
MP3XBR0200N020T10	2	4	1°	3.2	20	6.2	2.6°	4.38	70	6	3	●	1	—	21.3	22.4	*	10,200
MP3XBR0200N030T10	2	4	1°	3.2	30	6.2	1.8°	4.74	70	6	3	●	1	—	31.4	*	*	11,000
MP3XBR0200N035T10	2	4	1°	3.2	35	6.2	1.6°	4.9	70	6	3	●	1	—	36.4	*	*	12,000
MP3XBR0200N040T10	2	4	1°	3.2	40	6.2	1.5°	5.08	80	6	3	●	1	—	41.4	*	*	12,000
MP3XBR0200N045T10	2	4	1°	3.2	45	6.2	1.3°	5.26	80	6	3	●	1	—	46.5	*	*	13,000
MP3XBR0200N066T10	2	4	1°	3.2	66	6.2	1°	—	100	6	3	●	2	—	*	*	*	18,100
MP3XBR0200N050T15	2	4	1.5°	3.2	50	6.2	2.2°	6.2	90	8	3	●	1	—	—	53	*	14,900
MP3XBR0200N084T15	2	4	1.5°	3.2	84	6.2	1.5°	—	120	8	3	●	2	—	—	*	*	21,000
MP3XBR0200N030T30	2	4	3°	3.2	30	6.2	3.6°	6.4	90	8	3	●	1	—	—	—	31.9	11,800
MP3XBR0200N045T30	2	4	3°	3.2	45	6.2	2.6°	—	90	8	3	●	2	—	—	—	*	14,700
MP3XBR0250N038T10	2.5	5	1°	4	38	7	0.8°	—	80	6	3	●	2	—	*	*	*	15,800
MP3XBR0250N050T10	2.5	5	1°	4	50	7	1.7°	6.4	90	8	3	●	1	—	51.5	*	*	16,500
MP3XBR0250N065T10	2.5	5	1°	4	65	7	1.4°	6.92	110	8	3	●	1	—	66.6	*	*	17,200
MP3XBR0250N066T15	2.5	5	1.5°	4	66	7	1.4°	—	110	8	3	●	2	—	—	*	*	17,500
MP3XBR0250N036T30	2.5	5	3°	4	36	7	2.4°	—	90	8	3	●	2	—	—	—	*	16,400
MP3XBR0300N040T10	3	6	1°	9	40	12	1.4°	6.82	80	8	3	●	1	—	41.8	*	*	16,300
MP3XBR0300N050T10	3	6	1°	9	50	12	1.2°	7.18	90	8	3	●	1	—	51.8	*	*	17,900
MP3XBR0300N073T10	3	6	1°	9	73	12	0.9°	—	110	8	3	●	2	—	*	*	*	21,400
MP3XBR0300N090T10	3	6	1°	9	90	12	1.3°	8.58	140	10	3	●	1	—	92	*	*	24,000
MP3XBR0300N053T15	3	6	1.5°	9	53	12	1.2°	—	90	8	3	●	2	—	—	*	*	18,100
MP3XBR0300N032T30	3	6	3°	9	32	12	1.9°	—	80	8	3	●	2	—	—	—	*	15,000
MP3XBR0400N050T10	4	8	1°	12	50	15	1.2°	9.08	110	10	3	●	1	—	51.9	*	*	20,500
MP3XBR0400N065T10	4	8	1°	12	65	15	1°	9.6	130	10	3	●	1	—	67	*	*	24,900
MP3XBR0400N076T10	4	8	1°	12	76	15	0.8°	—	130	10	3	●	2	—	*	*	*	28,300
MP3XBR0400N090T10	4	8	1°	12	90	15	1.3°	10.46	150	12	3	●	1	—	92.1	*	*	32,100
MP3XBR0400N040T15	4	8	1.5°	12	40	15	1.5°	9.16	90	10	3	●	1	—	—	*	*	17,700
MP3XBR0400N056T15	4	8	1.5°	12	56	15	1.1°	—	110	10	3	●	2	—	—	*	*	22,200
MP3XBR0400N035T30	4	8	3°	12	35	15	1.7°	—	90	10	3	●	2	—	—	—	*	16,300
MP3XBR0500N060T10	5	10	1°	15	60	25	1°	10.92	120	12	3	●	1	—	62.6	*	*	28,300
MP3XBR0500N070T10	5	10	1°	15	70	25	0.9°	11.28	120	12	3	●	1	—	*	*	*	33,700
MP3XBR0500N100T10	5	10	1°	15	100	25	1.7°	12.32	160	16	3	●	1	—	102.8	*	*	46,300
MP3XBR0500N050T15	5	10	1.5°	15	50	25	1.2°	11	100	12	3	●	1	—	—	*	*	22,100
MP3XBR0500N068T15	5	10	1.5°	15	68	25	0.9°	—	120	12	3	●	2	—	—	*	*	33,500
MP3XBR0500N046T30	5	10	3°	15	46	25	1.3°	—	100	12	3	●	2	—	—	—	*	20,600
MP3XBR0600N070T10	6	12	1°	18	70	28	1.6°	13.16	130	16	3	●	1	—	72.7	*	*	42,600
MP3XBR0600N100T10	6	12	1°	18	100	28	1.2°	14.22	160	16	3	●	1	—	102.9	*	*	51,200
MP3XBR0600N080T15	6	12	1.5°	18	80	28	1.5°	14.42	130	16	3	●	1	—	—	*	*	44,300
MP3XBR0600N069T30	6	12	3°	18	69	28	1.8°	—	130	16	3	●	2	—	—	—	*	42,300

* 간섭없음

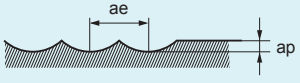
PRFRAD = ボール半径　　APMX = 刃長　　DN = 首径　　LF = 全長
DC = 外径　　LU = 首下長　　B2 = 干渉角　　DCON = シャンク径

추천절삭조건

피삭재			탄소강· 합금강(180—280HB) 합금공구강(≦350HB) 프리하든강 (35—45HRC) S45C、SCM440、SKD、SKT、NAK、PX5등				고경도강 (45—55HRC) SKD61、SKT4등				동· 동합금			
ボール半径 PRFRAD (mm)	首部テーパ半角 BHTA	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
R0.5	0.5°	8	40000	1200	0.07	0.22	39000	1200	0.06	0.19	39000	1200	0.12	0.38
		12	40000	1200	0.06	0.19	39000	1200	0.05	0.16	39000	1200	0.1	0.32
		16	35000	1100	0.06	0.18	33000	900	0.04	0.14	33000	900	0.09	0.29
		20	32000	960	0.05	0.14	29000	800	0.04	0.11	29000	800	0.07	0.22
		25	28000	830	0.03	0.11	24000	600	0.02	0.07	24000	600	0.05	0.15
		30	24000	720	0.03	0.1	21000	450	0.02	0.06	21000	450	0.04	0.13
		50	10000	300	0.003	0.015	11000	150	0.003	0.015	11000	150	0.006	0.019
	1°	10	40000	1200	0.07	0.22	39000	1300	0.06	0.19	39000	1300	0.12	0.38
		16	35000	1100	0.06	0.18	33000	1000	0.05	0.14	33000	1000	0.09	0.29
		20	32000	960	0.05	0.14	29000	900	0.04	0.11	29000	900	0.07	0.22
		25	28000	830	0.04	0.11	24000	700	0.03	0.08	24000	700	0.05	0.16
		30	24000	720	0.03	0.1	21000	550	0.02	0.06	21000	550	0.04	0.13
		35	17000	500	0.03	0.08	13000	350	0.02	0.05	13000	350	0.03	0.1
		50	10000	300	0.003	0.015	11000	250	0.003	0.015	11000	250	0.006	0.019
	1.5°	10	40000	1200	0.07	0.22	39000	1400	0.06	0.19	39000	1400	0.12	0.38
		16	35000	1100	0.06	0.18	33000	1100	0.05	0.14	33000	1100	0.09	0.29
		20	32000	960	0.05	0.14	29000	1000	0.04	0.11	29000	1000	0.07	0.22
		23	27000	830	0.04	0.11	24000	800	0.03	0.08	24000	800	0.05	0.16
		25	27000	830	0.04	0.12	24000	800	0.03	0.09	24000	800	0.05	0.17
	3°	10	40000	1200	0.07	0.22	39000	1500	0.06	0.19	39000	1500	0.12	0.38
		20	32000	960	0.05	0.14	29000	1100	0.04	0.11	29000	1100	0.07	0.22
		30	22000	660	0.03	0.1	19000	700	0.02	0.06	19000	700	0.04	0.13
		42	13000	390	0.005	0.02	11000	390	0.005	0.02	11000	390	0.01	0.03
	5°	25	32000	960	0.04	0.11	29000	1000	0.03	0.08	29000	1000	0.05	0.16
R0.75	0.5°	10	30000	1800	0.11	0.34	28000	1500	0.1	0.3	28000	1500	0.19	0.61
		16	27000	1600	0.09	0.27	24000	1100	0.08	0.24	24000	1100	0.15	0.48
		20	26000	1500	0.08	0.24	24000	1100	0.07	0.21	24000	1100	0.13	0.42
		30	25000	1400	0.07	0.21	22000	1000	0.06	0.18	22000	1000	0.11	0.35
	1°	10	30000	1900	0.11	0.34	28000	1600	0.1	0.3	28000	1600	0.19	0.61
		16	26000	1600	0.09	0.27	24000	1200	0.08	0.24	24000	1200	0.15	0.48
		20	27000	1700	0.08	0.24	24000	1200	0.07	0.21	24000	1200	0.13	0.42
		30	25000	1500	0.07	0.21	22000	1100	0.06	0.18	22000	1100	0.11	0.35
	1.5°	10	30000	1900	0.11	0.34	28000	1700	0.1	0.3	28000	1700	0.19	0.61
		16	27500	1700	0.09	0.27	24000	1300	0.08	0.24	24000	1300	0.15	0.48
		20	26500	1700	0.08	0.24	24000	1300	0.07	0.21	24000	1300	0.13	0.42
		25	26000	1600	0.07	0.22	23000	1200	0.06	0.19	23000	1200	0.12	0.38
		30	25000	1500	0.07	0.21	22000	1100	0.06	0.18	22000	1100	0.11	0.35
	3°	46	15000	450	0.05	0.16	14000	800	0.04	0.13	14000	800	0.08	0.26
切込み量基準														

1) 절입이 작을 경우, 회전 속도와 이송속도를 한층 더 올릴 수 있습니다.
2) 기계나 가공물의 장착 강성이 없어 떨림 및 이상음이 발생할 경우, 상기 표의 회전속도와 이송 속도를 동일한 비율로 낮춰 사용 해 주십시오.,

추천절삭조건

피삭재			탄소강· 합금강(180—280HB) 합금공구강(≦350HB) 프리하든강 (35—45HRC) S45C、SCM440、SKD、SKT、NAK、PX5등				고경도강 (45—55HRC) SKD61、SKT4등				동· 동합금			
ボール半径 PRFRAD (mm)	首部テーパ半角 BHTA	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
R1.0	0.5°	16	25000	1500	0.14	0.45	22000	1600	0.13	0.42	22000	1600	0.26	0.83
		20	23000	1400	0.1	0.3	20000	1400	0.09	0.27	20000	1400	0.17	0.54
		30	20000	1200	0.05	0.17	18000	1100	0.06	0.18	18000	1100	0.13	0.42
		35	19000	1100	0.05	0.15	17000	1000	0.05	0.16	17000	1000	0.12	0.38
		40	19000	1100	0.04	0.14	16000	900	0.05	0.14	16000	900	0.11	0.35
	1°	16	25000	2300	0.14	0.45	22000	1700	0.13	0.42	22000	1700	0.26	0.83
		20	23000	2100	0.1	0.3	20000	1500	0.09	0.27	20000	1500	0.17	0.54
		25	23000	1400	0.06	0.19	20000	1300	0.07	0.21	20000	1300	0.16	0.5
		30	20000	1200	0.05	0.17	18000	1200	0.06	0.18	18000	1200	0.13	0.42
		35	19000	1100	0.05	0.15	17000	1100	0.05	0.15	17000	1100	0.12	0.37
		40	19000	1100	0.04	0.14	16000	1000	0.05	0.14	16000	1000	0.11	0.35
		50	17000	900	0.03	0.09	15000	900	0.03	0.08	15000	900	0.06	0.19
		70	13000	700	0.02	0.06	11000	650	0.02	0.05	11000	650	0.04	0.12
	1.5°	16	25000	2300	0.14	0.45	22000	1800	0.13	0.42	22000	1800	0.26	0.83
		20	23000	2100	0.1	0.3	20000	1600	0.09	0.27	20000	1600	0.17	0.54
		25	23000	1600	0.06	0.19	20000	1400	0.07	0.21	20000	1400	0.16	0.5
		30	20000	1200	0.05	0.17	18000	1300	0.06	0.18	18000	1300	0.13	0.42
		35	19000	1100	0.05	0.15	16000	1100	0.05	0.16	17000	1100	0.12	0.38
		40	19000	1100	0.04	0.14	16000	1000	0.05	0.14	16000	1000	0.11	0.35
	3°	20	23000	2100	0.1	0.3	20000	1700	0.09	0.27	20000	1700	0.17	0.54
		30	18000	1600	0.08	0.26	16000	1300	0.07	0.22	16500	1300	0.14	0.45
		42	16000	1400	0.07	0.21	13000	1000	0.06	0.18	13000	1000	0.11	0.35
	5°	27	18000	2200	0.09	0.29	17000	1900	0.08	0.26	17000	1900	0.16	0.51
R1.5	0.5°	10	20000	2400	0.22	0.7	17000	1900	0.21	0.67	17000	1900	0.42	1.34
		20	17000	2000	0.2	0.64	15000	1600	0.19	0.61	15000	1600	0.38	1.22
		30	16000	1700	0.14	0.45	13000	1400	0.13	0.42	13000	1400	0.26	0.83
		40	16000	1400	0.08	0.24	12000	1200	0.09	0.27	12000	1200	0.2	0.65
		50	13000	1100	0.06	0.2	11000	1100	0.07	0.22	11000	1100	0.17	0.54
	1°	20	17000	2000	0.2	0.64	15000	1800	0.19	0.61	15000	1800	0.38	1.22
		30	17000	1900	0.14	0.45	13000	1500	0.13	0.42	13000	1500	0.26	0.83
		35	16000	1700	0.08	0.26	13000	1500	0.09	0.29	13000	1500	0.22	0.69
		40	16000	1500	0.08	0.24	13000	1300	0.09	0.27	13000	1300	0.2	0.65
		50	13000	1200	0.06	0.2	11000	1100	0.07	0.22	11000	1100	0.17	0.54
		60	13000	1100	0.06	0.19	11000	1000	0.07	0.21	11000	1000	0.16	0.5
		70	10000	800	0.05	0.17	9000	700	0.06	0.18	9000	700	0.13	0.42
	1.5°	20	17000	2000	0.2	0.64	15000	1900	0.19	0.61	15000	1900	0.38	1.22
		30	16000	1800	0.14	0.45	13000	1600	0.13	0.42	13000	1600	0.26	0.83
		35	15000	1700	0.08	0.26	12000	1400	0.09	0.29	12000	1400	0.22	0.69
		40	15000	1600	0.08	0.24	12000	1300	0.09	0.27	12000	1300	0.2	0.65
		45	13000	1400	0.07	0.22	11000	1300	0.08	0.24	11000	1300	0.18	0.58
		52	13000	1300	0.06	0.2	11000	1100	0.07	0.22	11000	1100	0.17	0.54
		64	10000	900	0.06	0.18	9000	900	0.06	0.19	9000	900	0.14	0.46
	3°	25	16000	2400	0.16	0.51	13000	1900	0.15	0.48	13000	1900	0.3	0.96
		34	14000	2100	0.13	0.4	11000	1600	0.12	0.37	11000	1600	0.23	0.74
		40	14000	1700	0.12	0.37	11000	1400	0.11	0.34	11000	1400	0.21	0.67
		54	12000	1400	0.1	0.3	10000	1200	0.09	0.27	10000	1200	0.17	0.54
切込み量基準														

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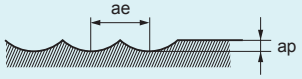
피삭재			탄소강· 합금강(180—280HB) 합금공구강(≦350HB) 프리하든강 (35—45HRC) S45C、SCM440、SKD、SKT、NAK、PX5등				고경도강 (45—55HRC) SKD61、SKT4等				동· 동합금			
ボール半径 PRFRAD (mm)	首部テーパ半角 BHTA	首下長 LU (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)	回転速度 (min^{-1})	送り速度 (mm/min)	切込み量 ap (mm)	切込み量 ae (mm)
R2.0	0.5°	30	14000	2100	0.23	0.74	11000	1800	0.22	0.7	11000	1800	0.44	1.41
		40	12000	1800	0.19	0.61	10000	1600	0.18	0.58	10000	1600	0.36	1.15
		60	9000	1300	0.06	0.19	8500	1400	0.07	0.21	8500	1400	0.16	0.5
	1°	20	15000	2700	0.31	0.99	12000	2200	0.3	0.96	12000	2200	0.72	2.3
		30	14000	2100	0.23	0.74	11000	1800	0.22	0.7	11000	1800	0.53	1.69
		35	12000	1800	0.21	0.67	10000	1700	0.2	0.64	10000	1700	0.48	1.54
		40	12000	1700	0.19	0.61	10000	1600	0.18	0.58	10000	1600	0.43	1.38
		45	12000	1500	0.13	0.42	10000	1600	0.12	0.38	10000	1600	0.29	0.92
		66	9000	1100	0.08	0.24	8500	1300	0.07	0.21	8500	1300	0.16	0.5
	1.5°	50	12000	2200	0.11	0.35	10000	1700	0.1	0.32	10000	1700	0.24	0.77
		84	8000	1400	0.04	0.13	6500	900	0.03	0.1	6500	900	0.07	0.23
	3°	30	14000	2500	0.23	0.74	11000	2000	0.22	0.7	11000	2000	0.53	1.69
		45	11000	1900	0.16	0.51	9000	1600	0.15	0.48	9000	1600	0.36	1.15
R2.5	1°	38	10000	2200	0.28	0.9	8500	2000	0.27	0.86	8500	2000	0.65	2.07
		50	9000	1900	0.24	0.77	8000	1800	0.23	0.74	8000	1800	0.55	1.77
		65	8000	1600	0.16	0.51	6500	1400	0.15	0.48	6500	1400	0.36	1.15
	1.5°	66	8000	1600	0.16	0.51	6500	1500	0.15	0.48	6500	1500	0.36	1.15
	3°	36	10000	2700	0.31	0.99	8500	2300	0.3	0.96	8500	2300	0.72	2.3
R3.0	1°	40	8000	2200	0.28	0.9	7500	2100	0.27	0.86	7500	2100	0.65	2.07
		50	8000	2000	0.23	0.74	6500	1800	0.22	0.7	6500	1800	0.53	1.69
		73	7000	1700	0.15	0.48	6500	1700	0.14	0.45	6500	1700	0.34	1.07
		90	6500	1500	0.09	0.29	6000	1300	0.08	0.26	6000	1300	0.19	0.61
	1.5°	53	7000	2100	0.22	0.7	6500	1900	0.21	0.67	6500	1900	0.5	1.61
	3°	32	9000	2400	0.35	1.12	8000	2200	0.34	1.09	8000	2200	0.82	2.61
R4.0	1°	50	6000	2200	0.41	1.31	5500	2000	0.4	1.28	5500	2000	0.96	3.07
		65	6000	2000	0.36	1.15	5200	1700	0.35	1.12	5200	1700	0.84	2.69
		76	6000	1800	0.29	0.93	5000	1500	0.28	0.9	5000	1500	0.67	2.15
		90	5000	1400	0.19	0.61	4700	1200	0.18	0.58	4700	1200	0.43	1.38
	1.5°	40	6000	2300	0.46	1.47	5800	2200	0.45	1.44	5800	2200	1.08	3.46
		56	6000	2200	0.38	1.22	5500	2000	0.37	1.18	5500	2000	0.9	2.84
	3°	35	7000	2700	0.49	1.57	6000	2400	0.48	1.54	6000	2400	1.15	3.69
R5.0	1°	60	5500	2600	0.51	1.63	4500	2300	0.5	1.6	4500	2300	1.2	3.84
		70	5500	2600	0.46	1.47	4500	2200	0.45	1.44	4500	2200	1.08	3.46
		100	5000	2400	0.36	1.15	4000	1900	0.35	1.12	4000	1900	0.84	2.69
	1.5°	50	5000	2400	0.56	1.79	4600	2400	0.55	1.76	4600	2400	1.32	4.22
		68	5000	2400	0.49	1.57	4600	2300	0.48	1.54	4600	2300	1.15	3.69
	3°	46	5000	2400	0.69	2.21	4800	2500	0.68	2.18	4800	2500	1.63	5.22
R6.0	1°	70	4500	2600	0.81	2.59	4000	2100	0.8	2.56	4000	2100	1.92	6.14
		100	4000	2200	0.61	1.95	3500	1800	0.6	1.92	3500	1800	1.44	4.61
	1.5°	80	5000	2300	0.71	2.27	4000	2000	0.7	2.24	4000	2000	1.68	5.38
	3°	69	5000	2700	0.81	2.59	4000	2200	0.8	2.56	4000	2200	1.92	6.14
切込み量基準														

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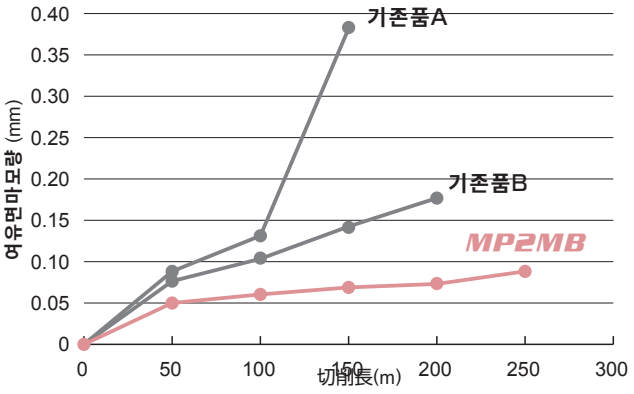
MS plus는 코스트퍼포먼스의 대명사

절삭성능

탄소강 S50C

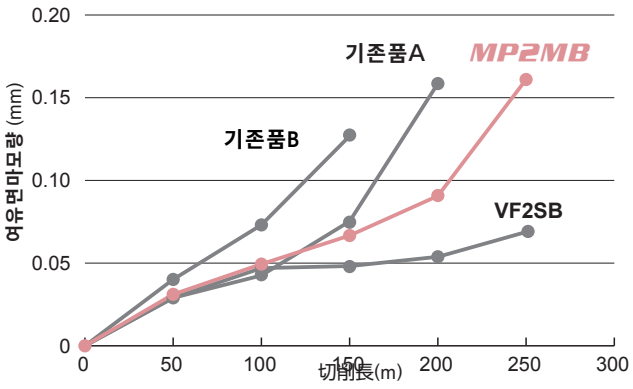
탄소강의 내마모성은 기존품 대비 큰폭의 수명연장이 기대할 수 있습니다.



<절삭조건>
피삭재: S55C (220HB)
사용공구: 2날 볼 엔드밀 R3
회전속도: 16,000min-1
절삭속도: 284m/min
테이블이송: 2,000mm/min
1날당 이송: 0.06mm,
절입량: ap 2mm, ae0.3mm
돌출길이: 20mm
가공형태: AIR BLOW
사용기계: 입형MC(BT40)

합금공구강 SKD61(52HRC)

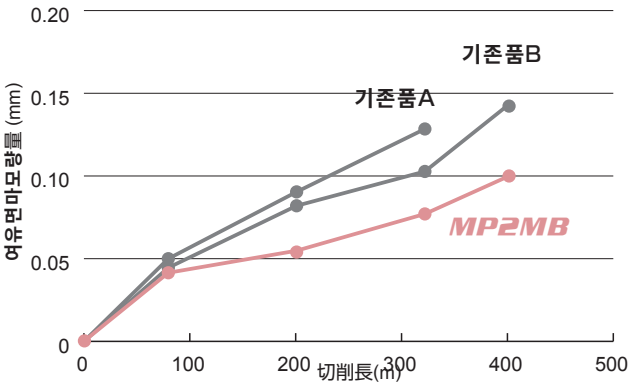
SKD61(52HRC)에서도 기존품 대비 양호한 내마모성이 기대할 수 있습니다., 한층 더 긴 수명은 iMPACT MIRACLE이 적합합니다.



<절삭조건>
피삭재: SKD61 (52HRC)
사용공구: 2날 볼 엔드밀 R3
회전속도: 17,000min-1
절삭속도: 300m/min
테이블이송: 1,700mm/min
1날당 이송: 0.05mm/t.
절입량: ap 2mm, ae0.3mm
돌출길이: 20mm
가공형태: AIR BLOW
사용기계: 입형MC(BT40)

스텐레스강 STAVAX(52HRC)

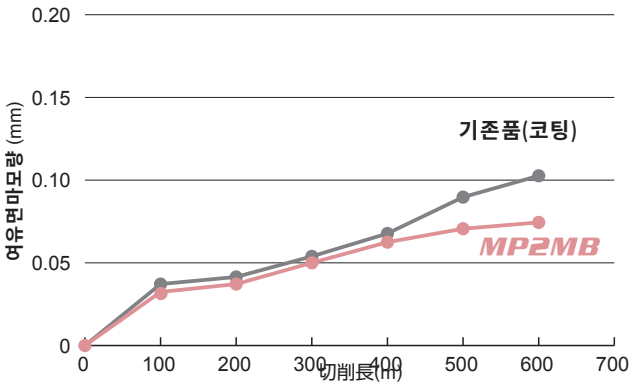
스텐레스강STAVAX의 가공에서도 기존품 대비 양호한 내마모성이 뛰어납니다.



<절삭조건>
피삭재: STAVAX (52HRC)
사용공구: 2날 볼 엔드밀 R3
회전속도: 18,000min-1
절삭속도: 169m/min
테이블이송: 3,600mm/min
1날당 이송: 0.1mm/t.
절입량: ap 0.4mm, ae1mm
돌출길이: 20mm
가공형태: AIR BLOW
사용기계: 입형MC(BT40)

동

동가공에서도 기존품 대비 내마모성이 뛰어납니다.

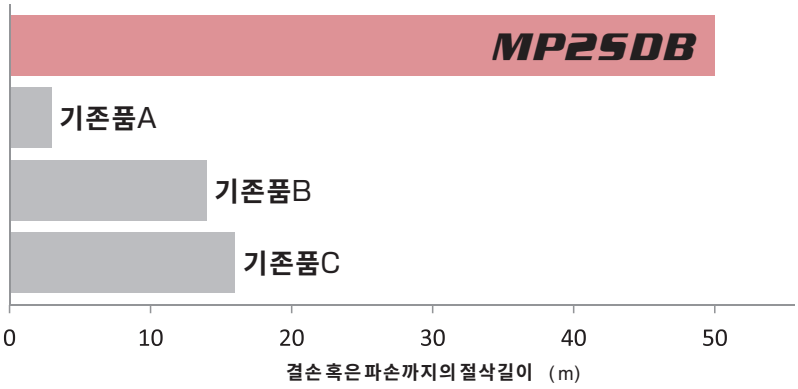


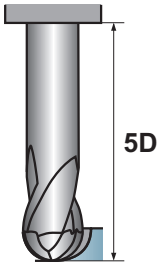
<절삭조건>
피삭재: 동
사용공구: 2날 볼 엔드밀 R3
회전속도: 15,000min-1
절삭속도: 267m/min
테이블이송: 1,500mm/min
1날당 이송: 0.05mm/t.
절입량: ap 2mm, ae0.2mm
돌출길이: 20mm
가공형태: 유제
사용기계: 입형MC(BT40)

절삭성능

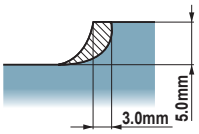
내결손성비교

긴 돌출길이,큰 절입, 고이송의 가혹한 조건에서도 결손없이 가공이 가능함



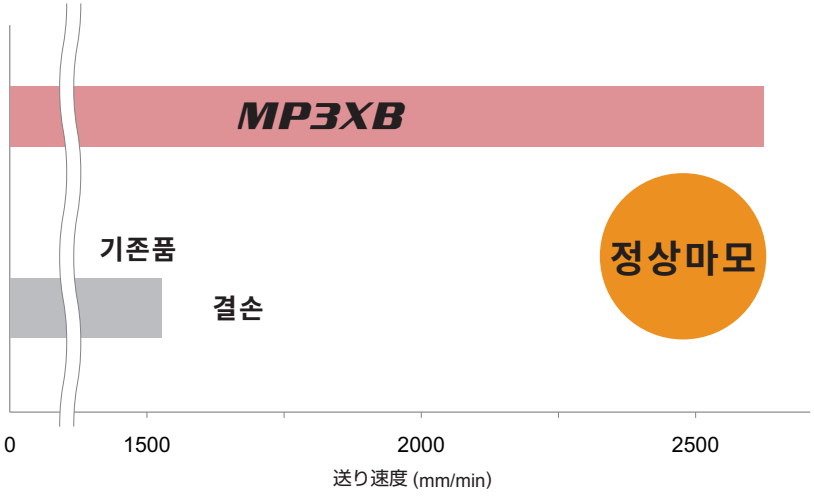


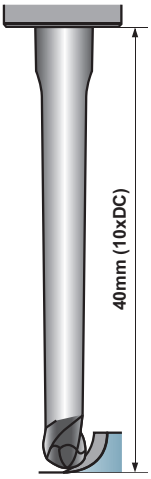
<절삭조건>
피삭재: SKD61 (52HRC)
사용공구: MP2SDBR0500
회전속도: 5,000min-1
절삭속도: 157m/min
테이블이송: 1,000mm/min
1날당 이송: 0.1mm/t.
절입량: ap 5.0mm, ae3.0mm
돌출길이: 50mm
가공형태: 다운컷, AIR BLOW
사용기계: 입형MC(BT50)



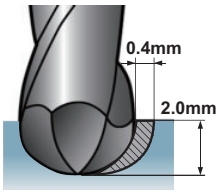
내결손성비교 R2x수하장40mm

깊은 황삭 가공에서도 결손 없이 가공이 가능함



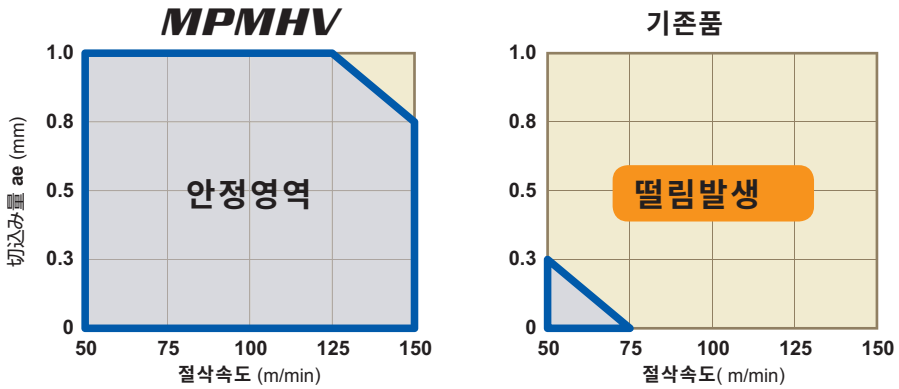


<절삭조건>
피삭재: SKD61 (52HRC)
사용공구: MP3XBR0200N040T10
회전속도: 7,500min-1
절삭속도: 94m/min
절입량: ap 2mm, ae0.4mm
돌출길이: 40mm
가공형태: 다운컷, AIR BLOW
사용기계: 입형MC(BT50)



SUS304 내떨림성비교

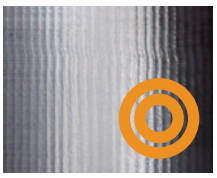
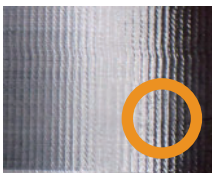
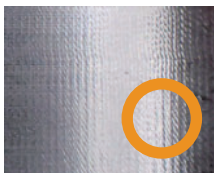
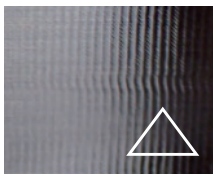
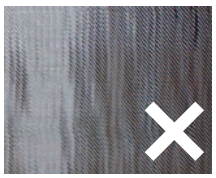
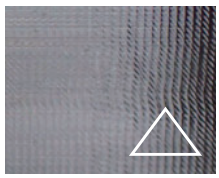
압도적인 내떨림성능으로, 고능률 가공이 가능함

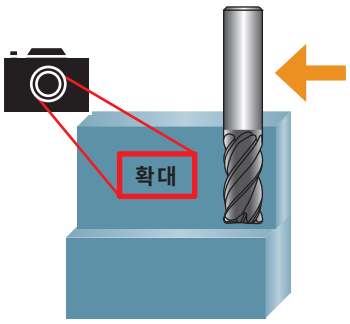


<절삭조건>
피삭재: SUS304
사용공구: MPMHVD1000
회전속도: 표 안
절삭속도: 표 안
테이블이송: 640-2240mm/min
1날당 이송: 0.1mm/t.
절입량: ap 20mm, ae표 안
돌출길이: 20mm
가공형태: 다운컷, 유제
사용기계: 가로형MC(BT40)

절삭성능

SUS304 내떨림성비교

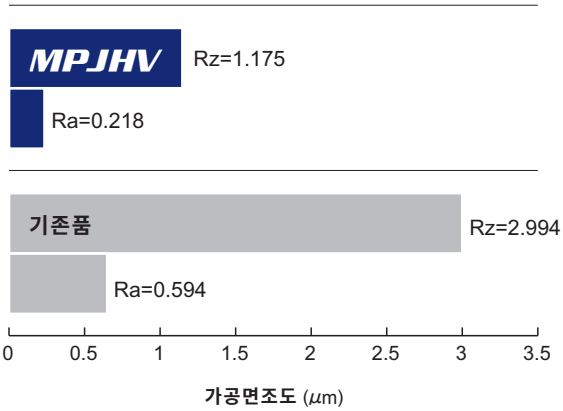
회전속도 n min-1	2400	3200	4000
절삭속도 vc m/min	75	100	125
MPMHVRB			
기존품			



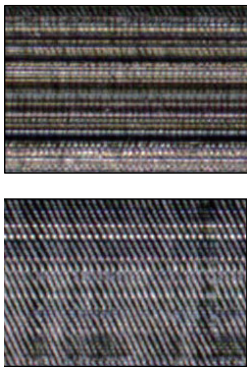
<절삭조건>
피 삭 재 : SUS304
사 용 공 구 : MPMHVRBD1000R100
회 전 속 도 : 표 참 조
절 삭 소 도 : 표 참 조
테이블이송 : 960 – 1600 mm/min
1날당이송찌 : 0.1 mm/t.
절 입 량 : ap 20 mm, ae 0.8 mm
가 공 상 태 : 수용성
사 용 기 기 : 입형MC (BT40)

SUS304 면조도비교(φ1 × 날장 4mm)

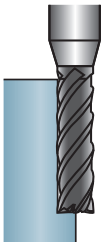
부등리과효과로떨림없이양호한정삭면



加工面写真 Rz

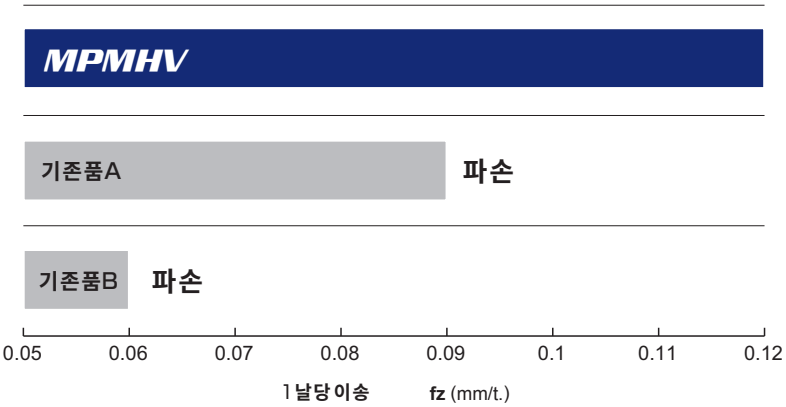


<절삭조건>
피 삭 재 : SUS304
사 용 공 구 : MPJHVD0100AP04
회 전 속 도 : 15900 min-1
절 삭 속 도 : 50 m/min
테이블이송 : 357 mm/min
1날당이송 : 0.004 mm/t.
절 입 량 : ap 3.2 mm, ae 0.003 mm
돌출길이 : 13 mm
가 공 상 태 : 다운컷
유상액
사 용 기 기 : 입형MC

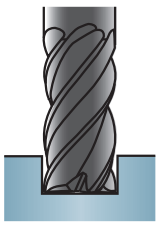


SUS304 이송한계비교(φ10 /DC홈절삭)

기존품B대비2개의이송속도를달성함



<절삭조건>
피 삭 재 : SUS304
사 용 공 구 : MPMHVD1000
회 전 속 도 : 2300 min-1
절 삭 속 도 : 72.3 m/min
1날당이송 : 표참조
절 입 량 : ap 10 mm
가 공 상 태 : 수용성
사 용 기 기 : 입형MC (BT50)



SKD61 1° 테이퍼입벽가공면비교

MPXLRB

기존품

＜절삭조건＞
피 삭 재 : SKD61 (52HRC)
회 전 속 도 : 17000 min-1
절 삭 속 도 : 107 m/min
테이블이송 : 1200 mm/min
1날당이송 : 0.025 mm/t.
절 입 량 : ap 0.1 mm, ae 0.06 mm
가공형태 : AIR BLOW

초경 엔드밀

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安全について
●切れ刃や切りくずには直接素手で触らないでください。●推奨条件の範囲内で使用し、工具交換は早めに行ってください。●高温の切りくずが飛散したり、長く伸びた切りくずが排出されることがあります。安全カバーや保護めがねなどの保護具を使用してください。●不水溶性切削油剤を使用する場合は、防火対策を必ず行ってください。●工具を回転して使用する場合、必ず試運転を実施し振れ、振動、異常音がないことを確認してください。

三菱マテリアル株式会社 加工事業カンパニー

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EXP-13-E002
2017.2.E(1.2C)